City of Proctor

100 Pionk Drive • Proctor, MN 55810 • (218) 624-3641

Permit Application Checklist

Applicant Name: _____

Address: _____

Project Type: _____

Building Permits are needed when:

A building or structure is erected, constructed, enlarged, altered, repaired, moved, improved, removed, converted or demolished.

Building Permits are not needed when:

Movable cases, counters, partitions not over 5 feet, fences not over 6 feet, retaining walls not over 4 feet, painting, papering, similar finish work, window awnings, pre-fab above ground swimming pools less than or equal to 5,000 gallons.

Check Off

_____ Water Hook-Up
_____ Sewer Hook-Up
_____ Septic - Approved
_____ Storm Hook-Up

Permits Needed:

_____ Building
_____ Plumbing
_____ Electrical
_____ Excavation

Zoning _____ Zone

_____ Permitted Use
_____ Conditional Use Required
_____ Rezone
_____ Variance Needed

Use of Property _____

_____ Parcel Complete
_____ Wetland Delineation Complete
_____ Floodplain
_____ P and Z Permit Approval

Drawings

_____ Site Plan
_____ Roof and Floor Plans
_____ Elevations
_____ Building Section(s)

Plan Check Fee

_____ Required
_____ Not Required

City of Proctor

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Residential Primary Building Construction

To aid in the drawing of your site plan, please remember these size, height, setback and separation requirements. Setbacks are from the property lines.

Return Permit Application Plus Complete Specification And Site Plan Sheets To City (If Any Are Missing, No Permit Can Be Issued).

Main Building (all zones)

Front:	35 feet (68 feet from center of road)
Rear:	25 feet (33 feet from center of alley)
Sides:	R-1-a: 8 feet R-1-b – R-3: 6 feet

Accessory Buildings (garages, sheds, etc.)

Size:	Maximum of 1,200 square feet
Height:	18 feet from finished grade to top of ridge
Front:	35 feet (68 feet from center of road) if no alley 60 feet (93 feet from center of road) with alley
Sides:	2 feet 6 inches (to face of eaves)
Rear:	13 feet to center of alley
To Main building:	10 feet
To any other accessory building:	5 feet

The sample site plan is a representation of what your plan should look like. The blank grid sheet is for your site plan. Show all dimensions and setbacks indicated. **Please** indicate the scale of your drawing, 1" = _?_ feet.

If you are unsure of what zone your project is in or you have a corner lot, please contact City Hall for additional information.

Please note, the City will require **Two Set** of prints for said structure including construction details, floor plans and two side elevations prior to issuance of a permit. This form is a summary of City ordinances and not meant to be all inclusive as July 1, 1998. For specific detail, please review specific City ordinances.

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Permit Application Requirements
Residential Additions and Remodels

The following is a guide to obtaining the required building permit for additions or remodeling of homes in the City of Proctor. Your application will be submitted in Proctor City Hall. Complete applications shall include the following:

Checklist

All plans must be drawn to scale in black or blue ink with scale noted on plan.
Do not use pencil.
Clearly designate proposed work and all existing conditions.
Provide complete structural information.
Provide Two copies of each sheet.

Minnesota Rules
1300.0130 CONSTRUCTION DOCUMENTS
Subp. 4. Site Plan.

The construction documents submitted with the application for permit shall be accompanied by a site plan drawn to scale, showing the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades, and the proposed finished grades, and it shall be drawn according to an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official may waive or modify the requirement for a site plan if the application for permit is for alteration or repair or when otherwise warranted.

☐ **Site Plan**

If the footprint of the building will be changed, a site plan drawn to a convenient scale must be provided which includes:

- The site plan must be drawn to scale.
- Property lines with dimensions. Dimensions should be consistent with the recorded legal description for the lot. Location of lot lines must be determined based on surveyed references.
- Adjacent streets or alleys with right-of-way widths shown, if known.
- Driveways and curb cuts.
- All buildings existing on the lot, their uses and an indication as to whether they will remain or be moved, removed or demolished. Dimensions to property lines in 2 or 3 directions.
- Any known easements on the property (i.e. utility or access) with dimensions, if known.
- Existing and proposed drainage patterns.
- Setback distances (front, rear and side) required by applicable codes.
- The footprint of the new residence, including all projections and any accessory structures (deck, garage, sheds, etc.).
- Complete exterior dimensions of all proposed structures and dimensions to all property lines.
- The legal description of the property.
- Scale.
- North arrow.
- Attach all prior Board of Zoning Appeals, Planning Commission and / or City Council Approvals.
- Other information may be required for certain sites and will be requested during the plan review process.

☐ **Construction Documents**

Plans must be drawn to scale, of sufficient clarity to indicate the nature and extent of the work proposed and show in sufficient detail that work will conform to provisions of the pertinent codes and all relevant laws and regulations. Plans must show a system providing a complete load path capable of transferring all loads from their point of origin through the load-resisting elements to the foundation.

☐ **Foundation Plan**

- Foundation plan indicating the size and type of foundation transferring building loads to the ground. Point load locations and point load values must be indicated on plans. The basement floor plan may be incorporated into the foundation plan.

☐ **Floor Plans**

- Complete plans for each floor, including basement and finished attic space.
- Interior and exterior dimensions must be provided for all walls and partitions.

☐ **Framing Plans For Roof And Floors**

- If engineered wood products are proposes, engineered plans by the product supplier must be submitted before a permit is issued. One reason for this requirement is to allow confirmation in plan review that the structure is designed to carry the applied loads to a foundation. Plans must be legible, so faxed copies may not be accepted.

☐ **Elevations**

- All sides, with finished grade indicated.

☐ **Wall Section(s)**

A sample wall section is provided.

- Drawn to an appropriate scale to show the construction of typical exterior wall, including:
- Roof / ceiling detail, footing and foundation detail, size of framing members, insulation, exterior and interior wall coverings, basement floor and intermediate floor details at the exterior wall, and interior ceiling heights.
- Some plans should include more than one wall section where circumstances differ from typical.
- Where wall heights exceed 10 feet, analysis by an Engineer is required with documentation submitted
- Brace walls as per **2006 IRC R602.10.3 Braced wall panel construction methods.** Where wall panels are less than 4 feet in length, panels shall be braced as per **2006 IRC R602.10.6.2 Alternate braced wall panel adjacent to a door or window opening,** or by the **APA Narrow Wall Bracing Method** (copy included in packet).

☐ **Details**

- As required to demonstrate clearly that construction will conform to relevant codes. Drawn to an appropriate scale.

Form: Energy Code Worksheet.

Form: Erosion Control Permit Application, when required for additions.

Additional information may be required for some projects. This will be determined during plan review.

Fees are based on the valuation of the project, which will be calculated during the plan review and are due at the time the permit is issued.

When the complete application is received, it will be reviewed for compliance with the Zoning and Water Management Ordinances. It will also be routed to the Building inspection Department. Building plans will be reviewed for compliance with all relevant codes. A permit will be issued when the determination has been made that all applicable codes have been complied with and all Zoning issues have been addressed and fees have been paid.

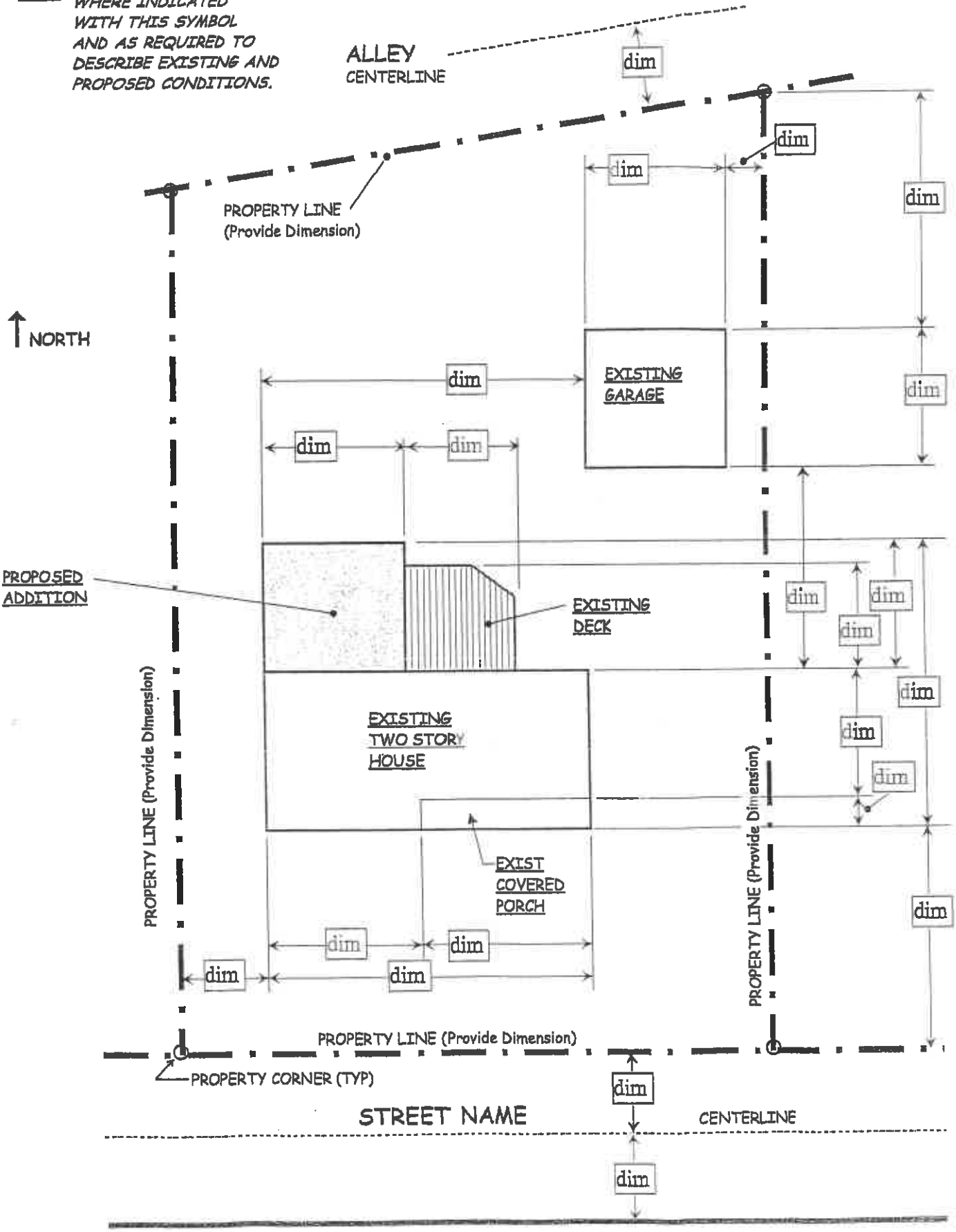
SAMPLE SITE PLAN

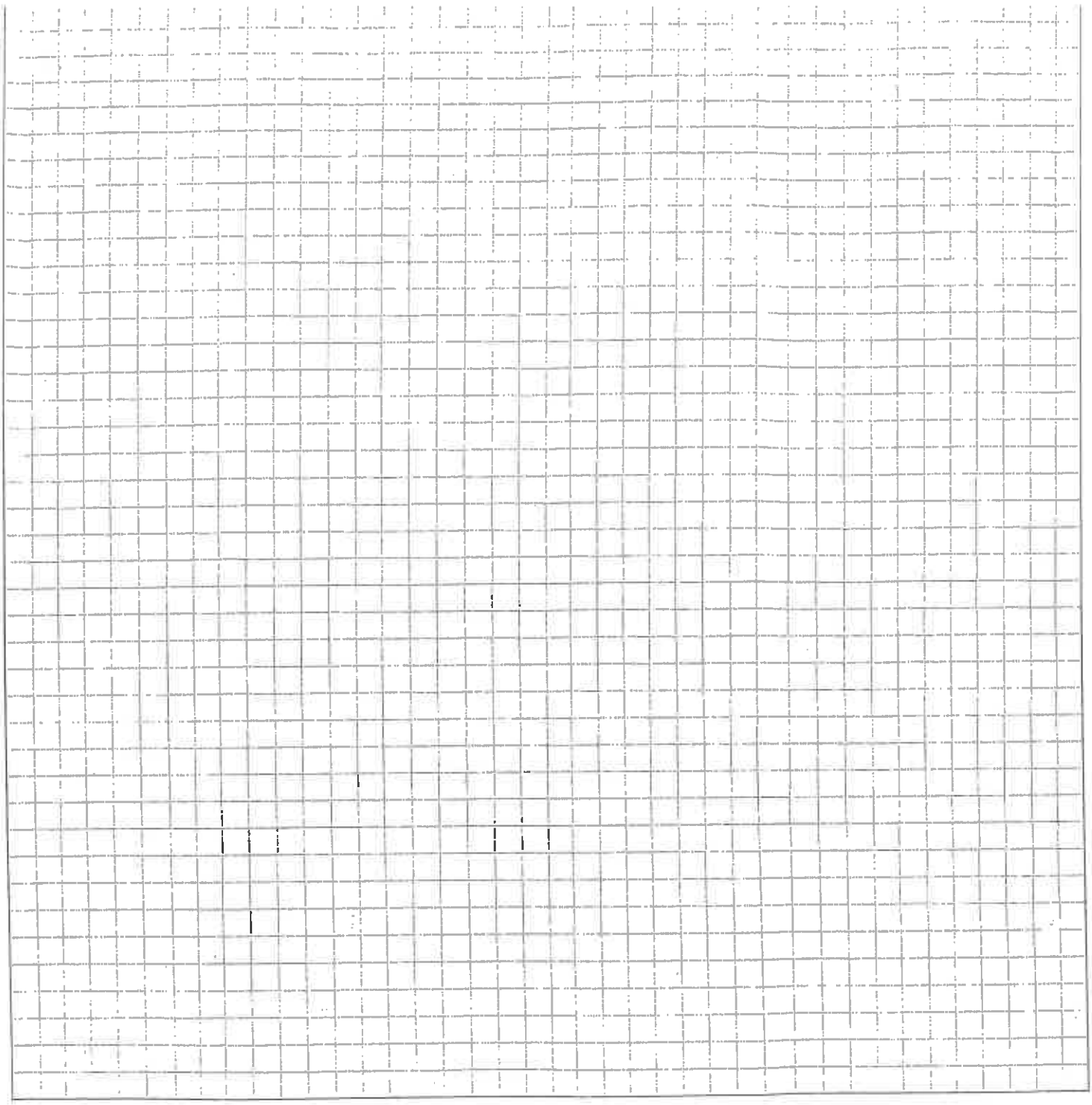
Do not use this sheet-create your own drawing.

SCALE: 1" = _____ FEET

NOTE:
IMPORTANT DIMENSIONS INCLUDE: THE DIMENSIONS OF THE ADDITION. THE DISTANCE FROM THE ADDITION TO OTHER STRUCTURES. THE DISTANCE FROM THE ADDITION TO THE LOT LINES. THE DISTANCE FROM THE ADDITION TO THE CENTERLINE OF THE STREET(S) AND ALLEY(S).

dim *PROVIDE DIMENSIONS WHERE INDICATED WITH THIS SYMBOL AND AS REQUIRED TO DESCRIBE EXISTING AND PROPOSED CONDITIONS.*





North Arrow Required
Scale: 1" = _____ Feet

SITE PLAN

Do Not Use Pencil

Site Address _____

Owner's Name _____

This Site Plan is an accurate and complete representation of the footprint(s) of all existing and proposed structure(s) and their location(s) on the subject property.

Applicant Signature _____

Date

Legal Description (Required)

_____

_____

_____

_____

_____

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Wall Section

This is a sample of a typical wall section. Your plan may differ from the assembly shown.

Draw Your Own Wall Section Representing Your Project. Provide information as indicated.

ROOF COVERING (TYPE)

ROOFING FELT (TYPE)

ICE/WATER SHEILD[1]

SHEATHING (TYPE)

TRUSSES @ (SPACING) o.c.[2]
OR (NOMINAL SIZE OF)
RAFTERS @ (SPACING) o.c. [2]

RIGID WIND WASH BARRIER (REQ'D)
TO BOTTOM OF TOP CHORD

(TYPE OF) CEILING INSULATION

(R-VALUE OF) CEILING INSULATION

FASCIA TYPE

SOFFIT (TYPE)

SOFFIT VENTING (TYPE)

ATTIC VENTING (TYPE)

SIDING (TYPE)

SHEATHING MATERIAL

WEATHER RESISTIVE SHEATHING PAPER (TYPE)

(NOMINAL SIZE OF) STUDS @ (SPACING) o.c.

(R-VALUE OF) WALL INSULATION

VAPOR BARRIER (TYPE)

(NOMINAL SIZE OF) SILL PLATE

RIM JOIST (SIZE AND TYPE)

(TYPE AND R-VALUE OF) RIM JOIST INSULATION (REQ'D)
AND VAPOR BARRIER

(SIZE OF) ANCHOR BOLTS @ (SPACING) o.c.
Embedded minimum 7"

(R-VALUE AND TYPE) FOUNDATION INSULATION[3]

EXTERIOR INSUL. PROTECTION ABOVE GRADE
AND TO 6 " BELOW GRADE (REQ'D)

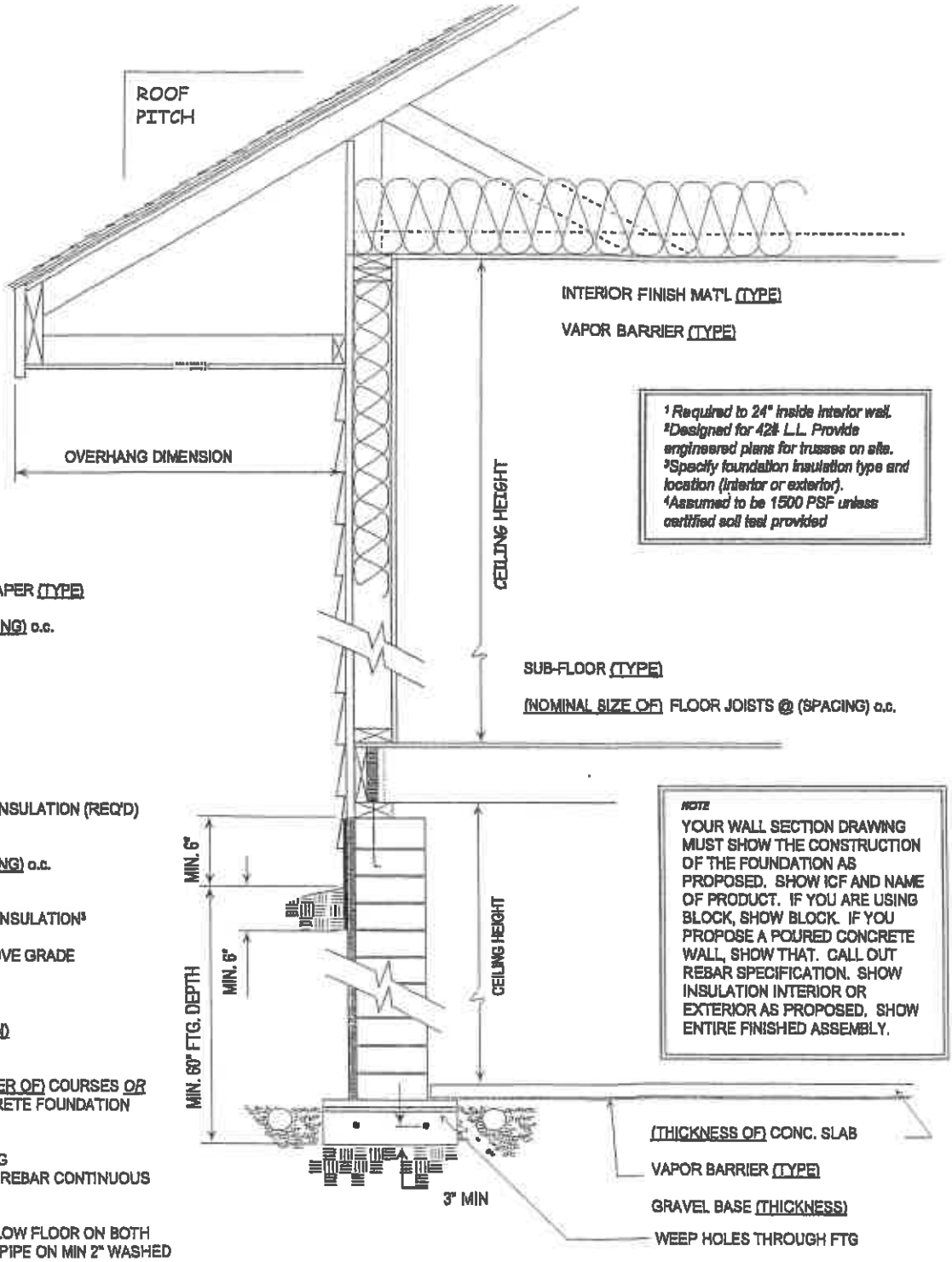
FOUNDATION WATERPROOFING
PRODUCT (PROVIDE SPECIFICATION)

(SIZE) CONC. BLOCK FOUNDATION
W/ (SIZE) REBAR (SPACING), (NUMBER OF) COURSES OR
(WALL THICKNESS) POURED CONCRETE FOUNDATION
W/ (SIZE) REBAR (SPACING)

(SIZE) POURED CONCRETE FOOTING
ON UNDISTURBED EARTH W/ (SIZE) REBAR CONTINUOUS
LOCATED IN BOTTOM 1/3.

FOUNDATION DRAINAGE REQ'D BELOW FLOOR ON BOTH
SIDES OF FOOTING. PERFORATED PIPE ON MIN 2" WASHED
GRAVEL OR CRUSHED ROCK LARGER THAN PIPE
OPENINGS & COVERED W/ 6" OF SAME MATERIAL.
DISCHARGE TO DAYLIGHT OR SUMP. INSTALL WEEPERS
THROUGH UPPER ⅓ OF FOOTING TO ALLOW FLOW TO
INTERIOR DRAIN. (SUMP OR DAYLIGHT, NOT SEWER)

SOIL BEARING CAPACITY[4] (LBS PER SQ. FT.)



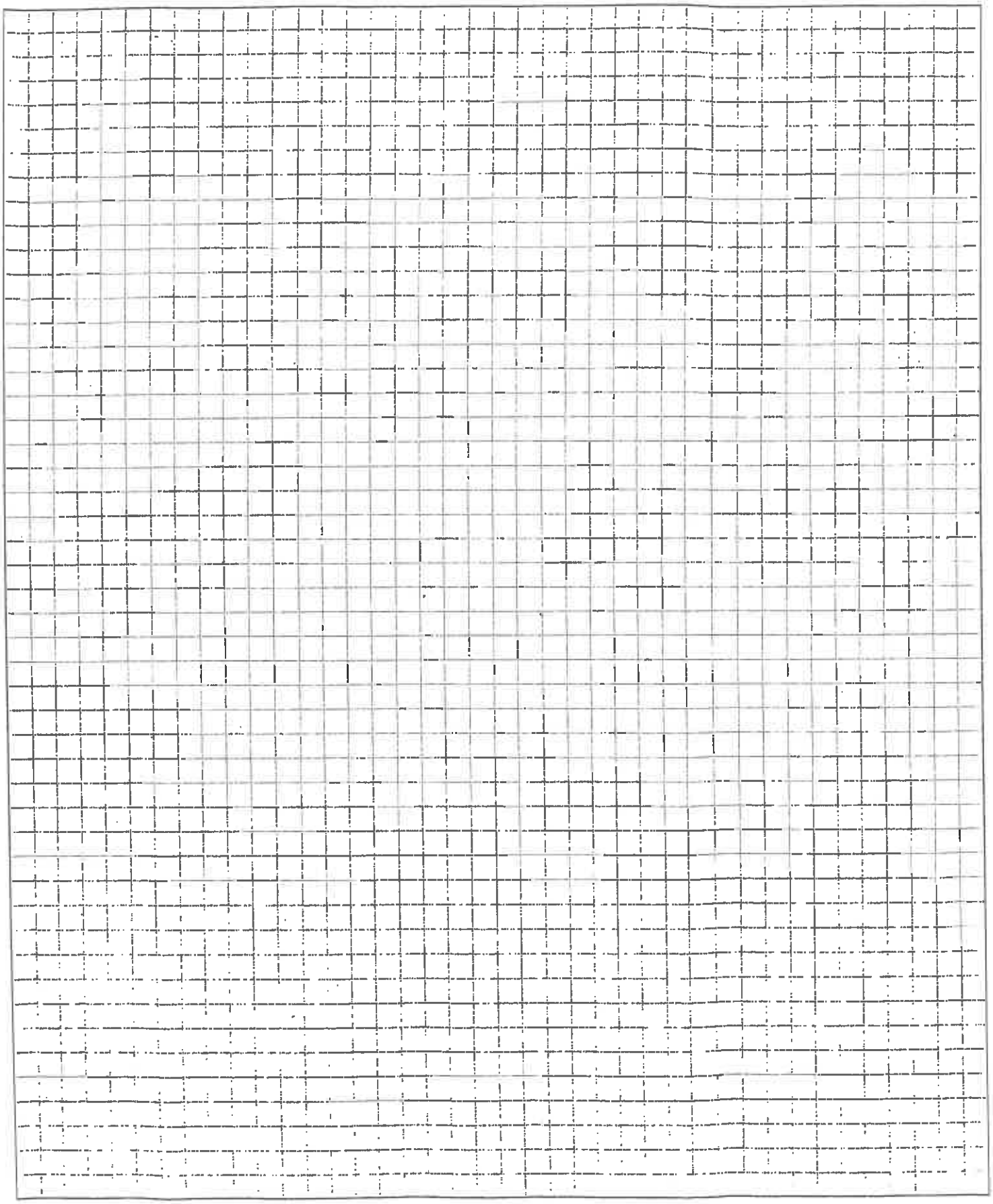
[1] Required to 24" inside interior wall.
[2] Designed for 42# L.L. Provide engineered plans for trusses on site.
[3] Specify foundation insulation type and location (interior or exterior).
[4] Assumed to be 1500 PSF unless certified soil test provided

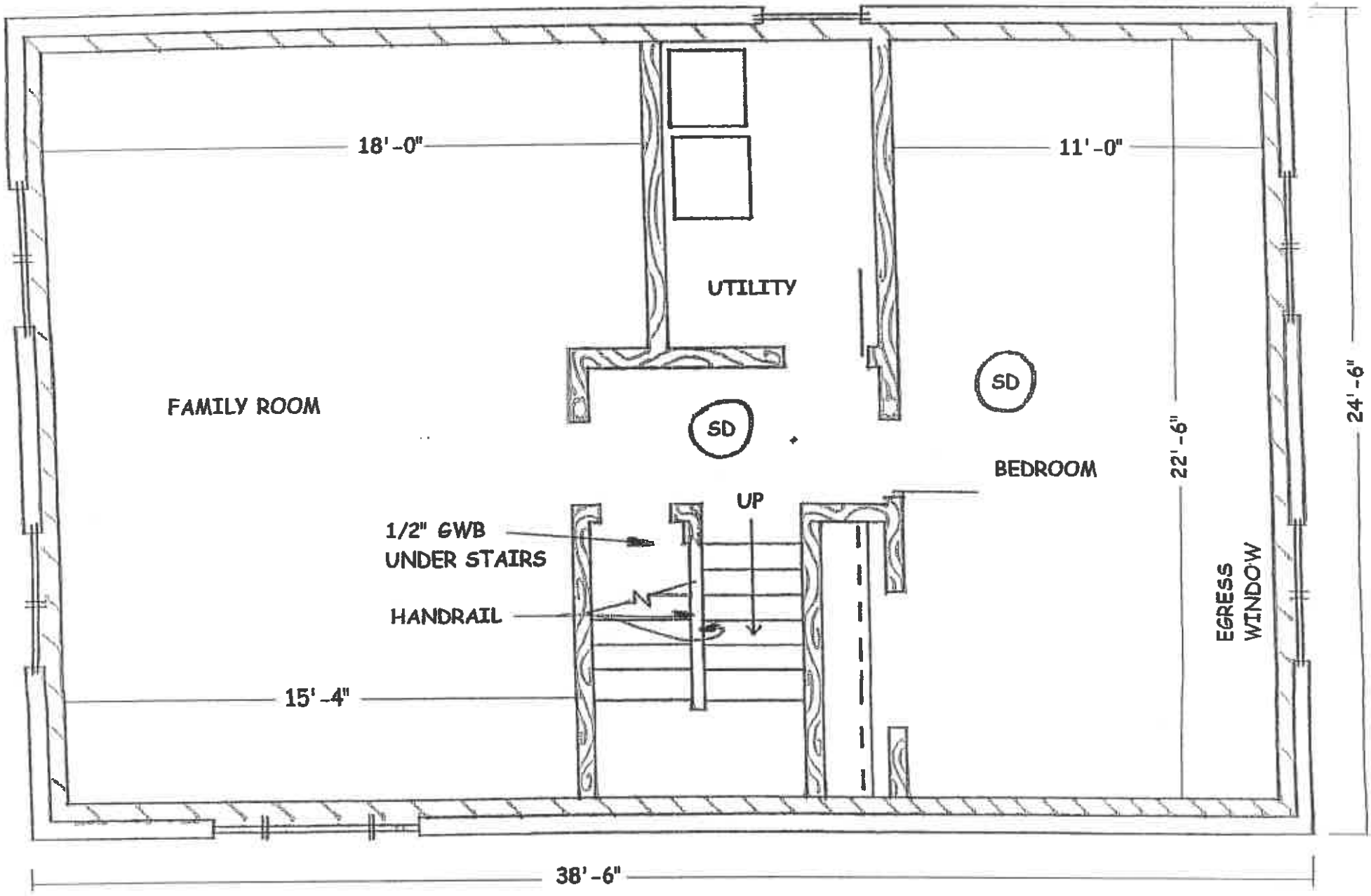
NOTE
YOUR WALL SECTION DRAWING MUST SHOW THE CONSTRUCTION OF THE FOUNDATION AS PROPOSED. SHOW ICF AND NAME OF PRODUCT. IF YOU ARE USING BLOCK, SHOW BLOCK. IF YOU PROPOSE A POURED CONCRETE WALL, SHOW THAT. CALL OUT REBAR SPECIFICATION. SHOW INSULATION INTERIOR OR EXTERIOR AS PROPOSED. SHOW ENTIRE FINISHED ASSEMBLY.

Project

Description Wall Section Scale

Drawn By Phone No. Date





↑ NORTH

BASEMENT PLAN
1/4" = 1'-0"

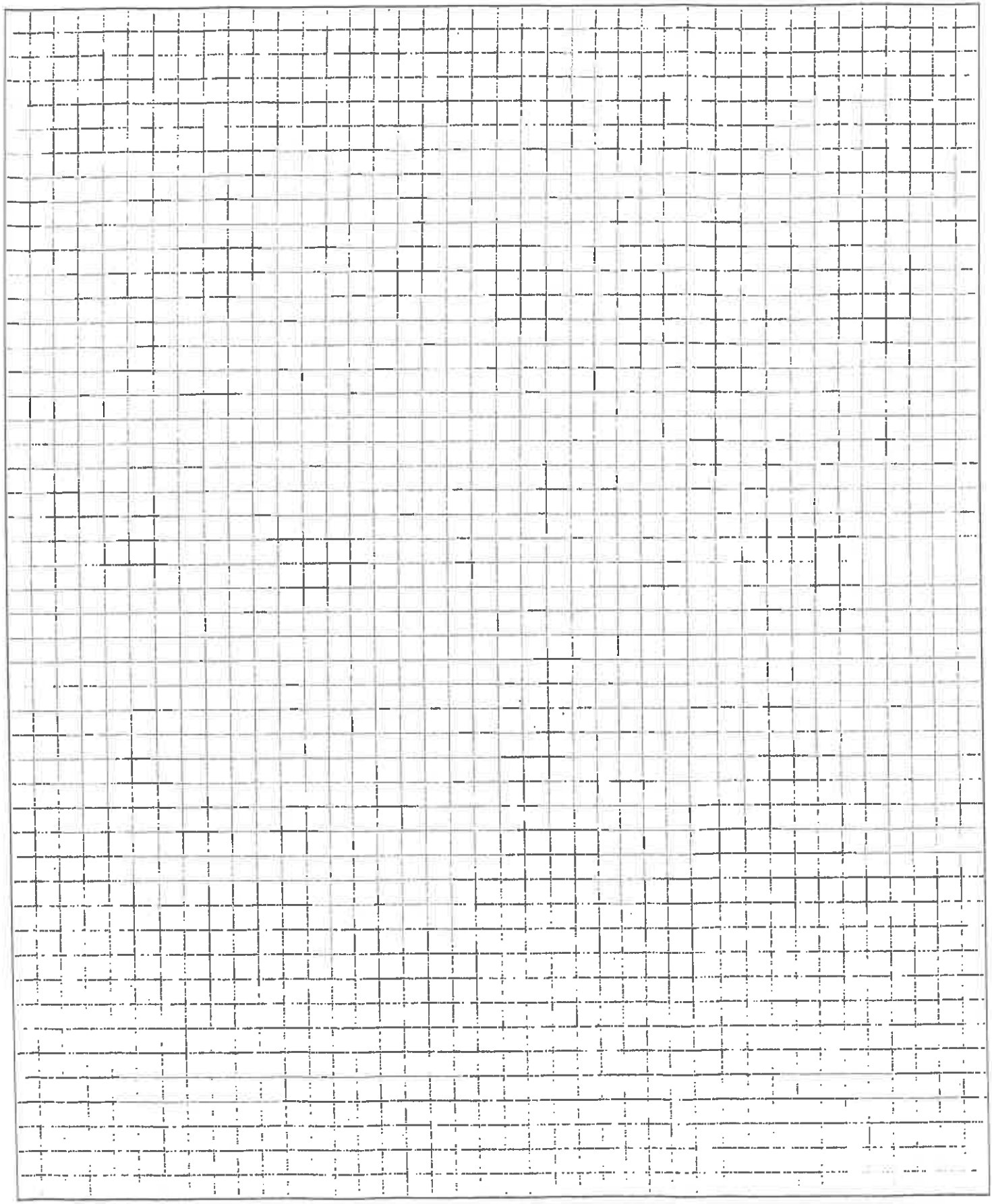
Project Description: Plan

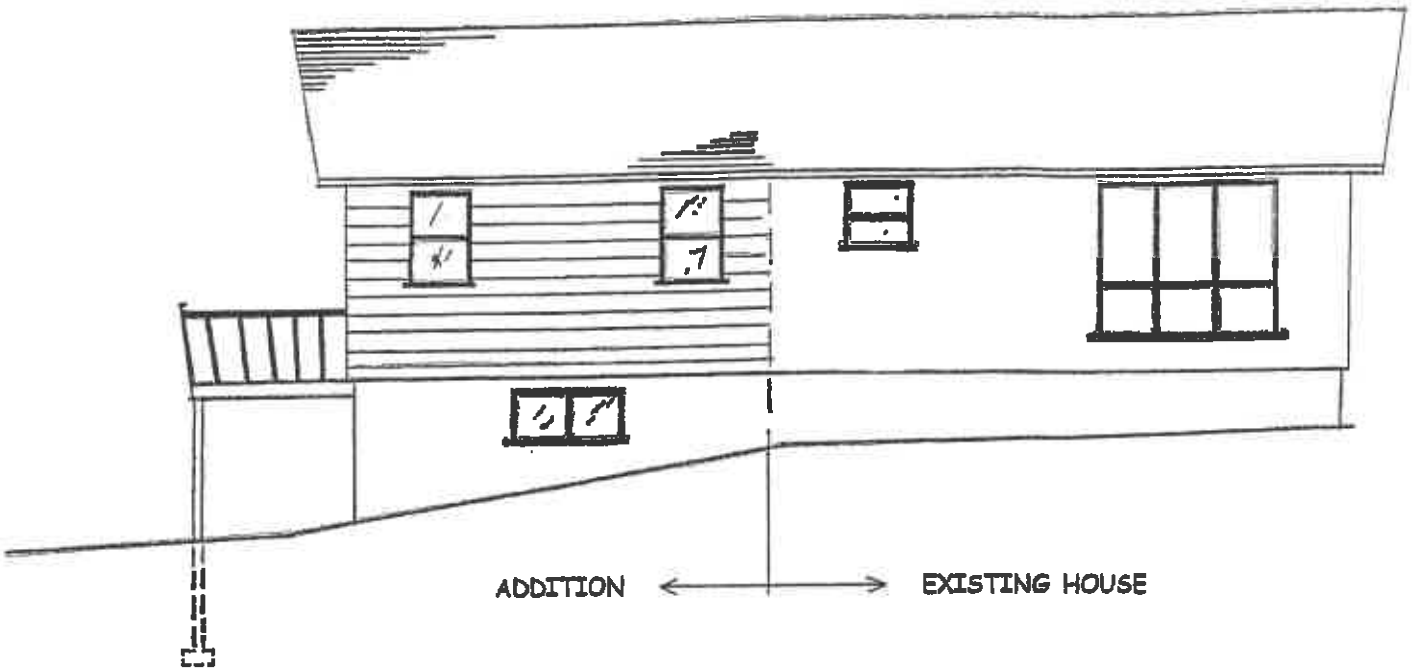
Drawn By:

Phone No.:

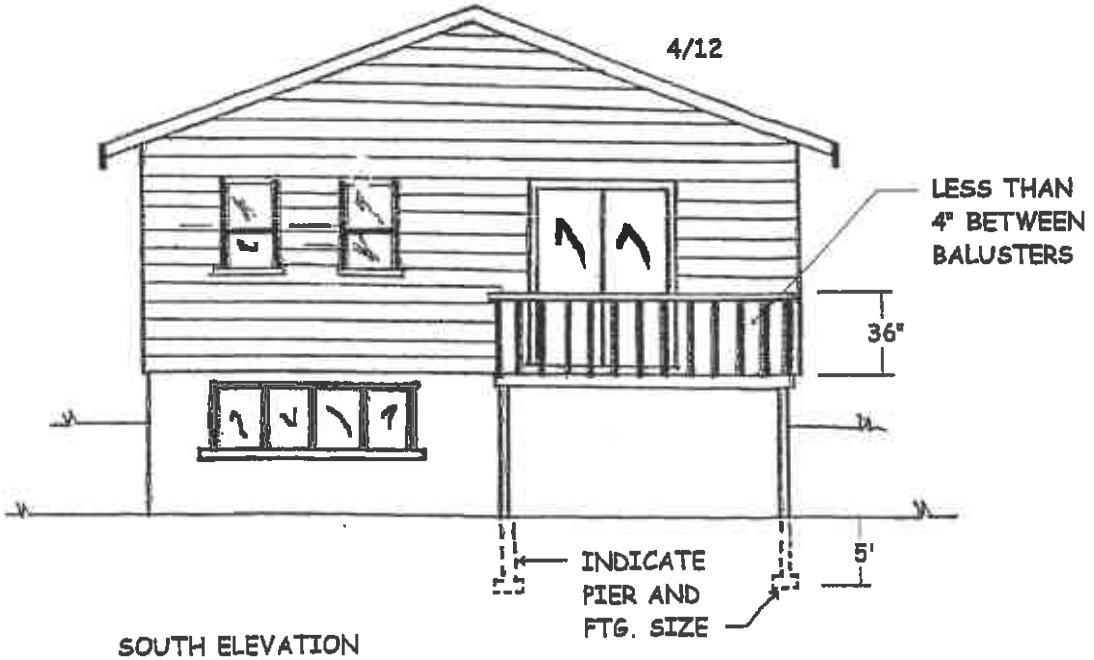
Scale:

Date:





EAST ELEVATION
1/8" = 1'-0"



SOUTH ELEVATION
1/8" = 1'-0"

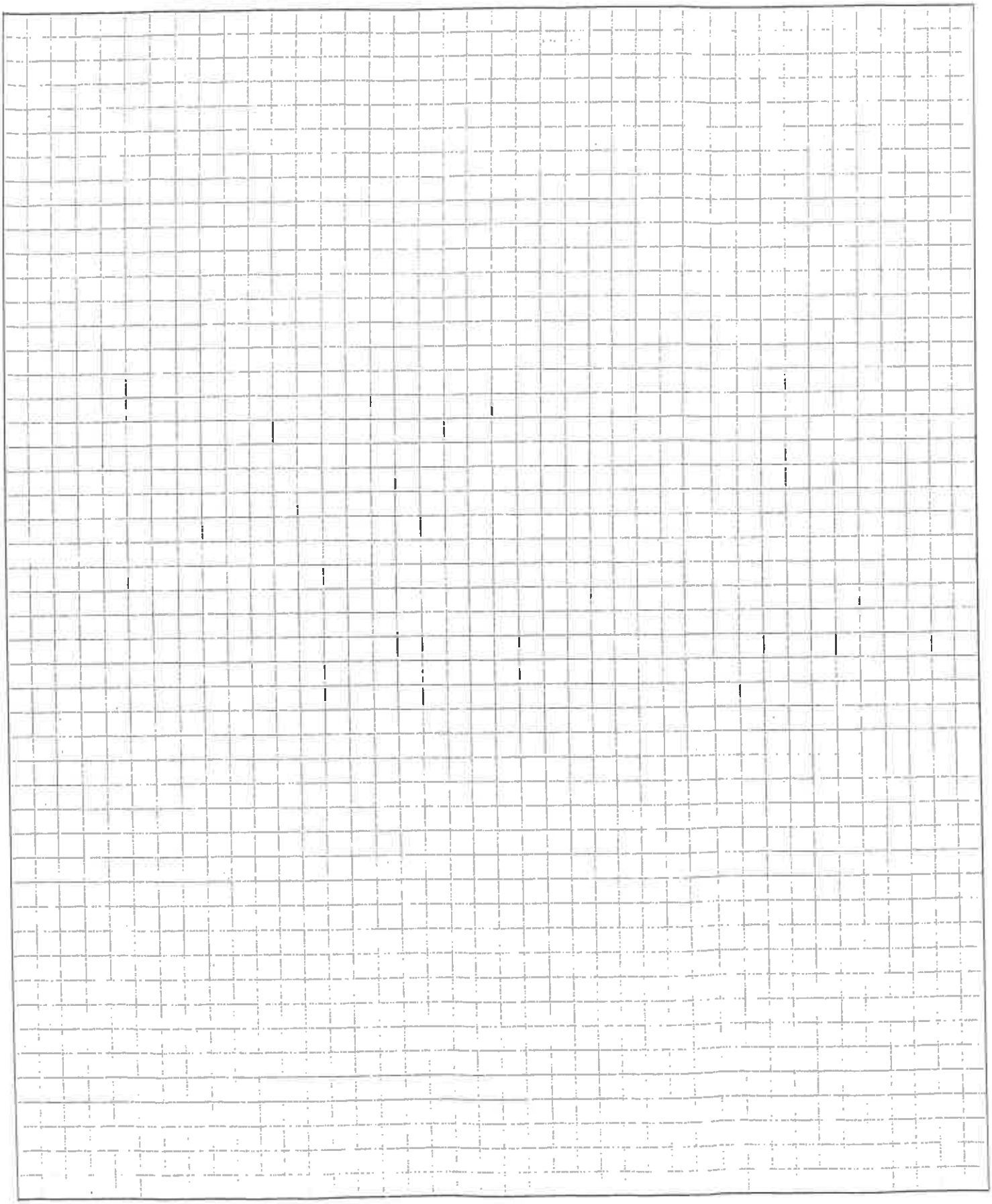
Project Description: Wall Elevation

Drawn By:

Phone No.:

Scale:

Date:



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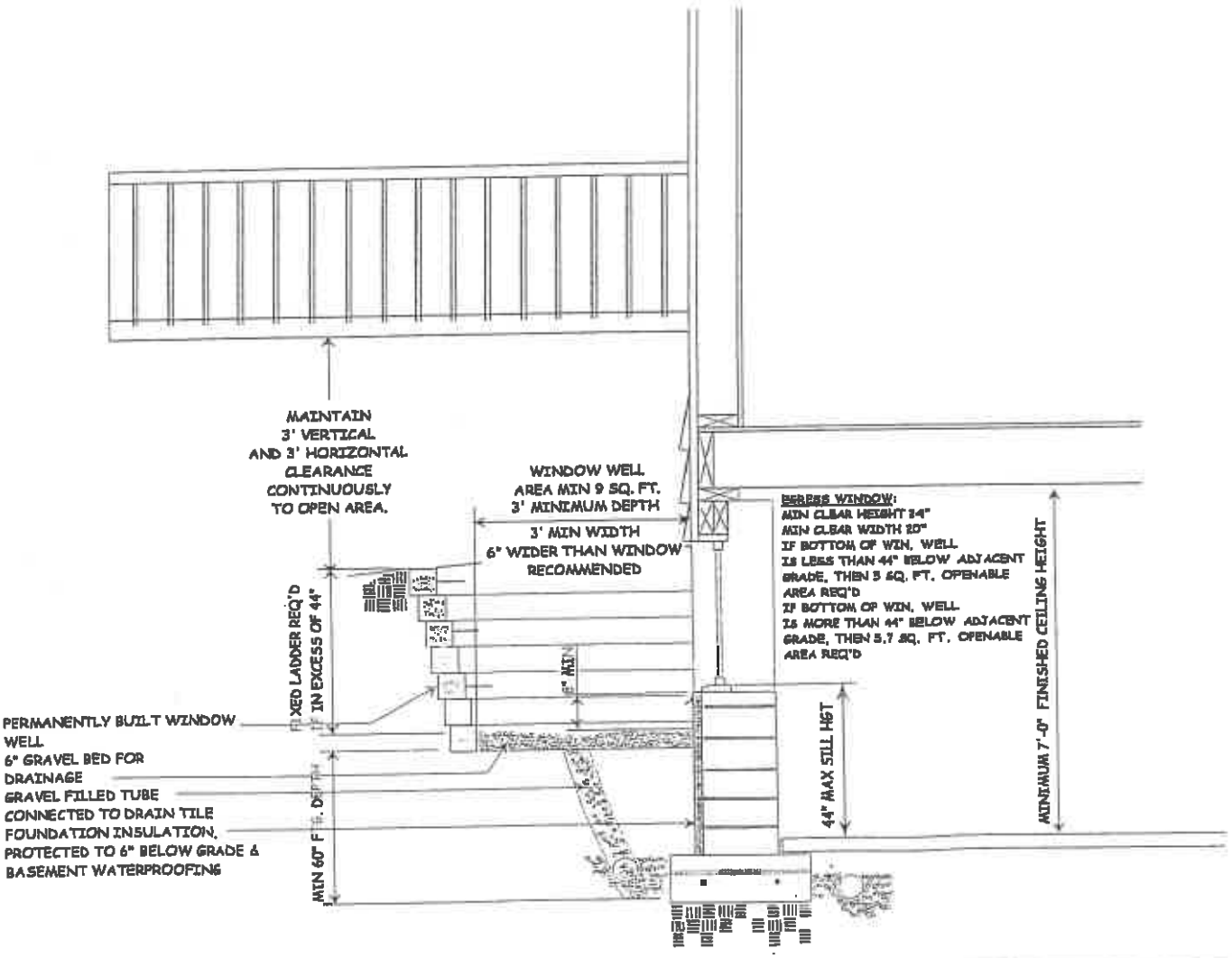
Emergency Escape and Rescue Openings
Window Well Requirements
2000 IRC Scetion 310
2003 MSBC Section 1309.0310



NOTE

Depth to bottom of footing for new homes shall be a minimum of 60".
Drop footings may be required.

Where 60" depth to bottom of footing cannot be achieved due to existing conditions, frost protection must be accomplished using 2" rigid foam insulation under the gravel bed extending horizontally from the foundation wall to the outer wall of the window well.

EMERGENCY ESCAPE

Guidelines for planning emergency escape windows and window wells.

Minnesota Department of Labor and Industry

Construction Codes and Licensing Division
Building Codes and Standards
443 Lafayette Road N.
St. Paul, MN 55155-4341

DLI Main: (651) 284-5005
BCS Unit Direct: (651) 284-5068
Fax: (651) 284-5749
TTY: (651) 297-4198

www.doli.state.mn.us

SMOKE - THE SILENT KILLER

Thousands of fires occur in residences each year. Many of these fires occur at night when the occupants are asleep. Severe injuries or death can be the result of these fires if the occupants are asleep and unaware the fire is in progress. Death usually results from asphyxiation long before the fire reaches the occupants.

SMOKE ALARMS SAVE LIVES

In order to prevent the tragic loss of life the Minnesota State Building Code requires smoke alarm to be installed in dwellings to alert the occupants of a fire. The code also requires that sleeping rooms and habitable space in basement dwelling units have windows or doors, which may be used for emergency escape or rescue.

The size of windows and doors required in the code are based on extensive research to determine the proper relationships of height and width of window openings to adequately serve for both rescue and escape.

People come in all sizes and windows come in all shapes. A fireman attempting a rescue will likely be wearing full rescue gear, which may include a breathing apparatus.

The size determined as a minimum for escape and rescue is 5.7 square feet of net clear openable area or 5.0 square feet for grade floor openings (see Code for detailed information). Because windows come all shapes, a minimum width dimension was needed to accommodate tall window shapes and a minimum height dimension for wide window shapes. Studies have determined the minimum net clear width needed is 20 inches, and the minimum net clear height dimension of 24 inches. These dimensions are part of the code requirements and assure the window or door will provide for a safe exit or rescue.

Emergency escape windows and doors must be located on the exterior of the building and open directly to a yard, street or alley so that the occupants may escape or be rescued directly from the room to the outside without having to travel through the building itself.

In a fire, time is critical to survival. You may not have time to instruct family members and guests on the proper window operation or to perform complex operations to get the window open. The code requires windows and doors used for emergency escape of rescue to be readily openable without any special knowledge or effort. Your local building inspector will need to be consulted to assist you in evaluating special types of windows.

The State of Minnesota adopts a set of construction standards known as the Minnesota State Building Codes (MSBC). The MSBC contains safety requirements relating to structure, mechanical, plumbing, energy, electrical, elevators, manufactured buildings, and life safety.

The information in this brochure is for general reference for residential construction projects. Contact your municipal Building Official regarding permits and specific code requirements for residential construction within your community.

BC_GI502 9-05

ESCAPE continued

EMERGENCY ESCAPE AND RESCUE OPENINGS

Emergency escape and rescue required. Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening for emergency escape and rescue. Escape and rescue window openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. A minimum ceiling height of 48 inches (1210 mm) shall be maintained above the exterior grade from the exterior wall to a public way.

Minimum opening area. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m^2). **Exception:** Grade floor openings shall have a minimum net clear opening of 5 square feet.

Minimum opening height. The minimum net clear opening height shall be 24 inches (610 mm).

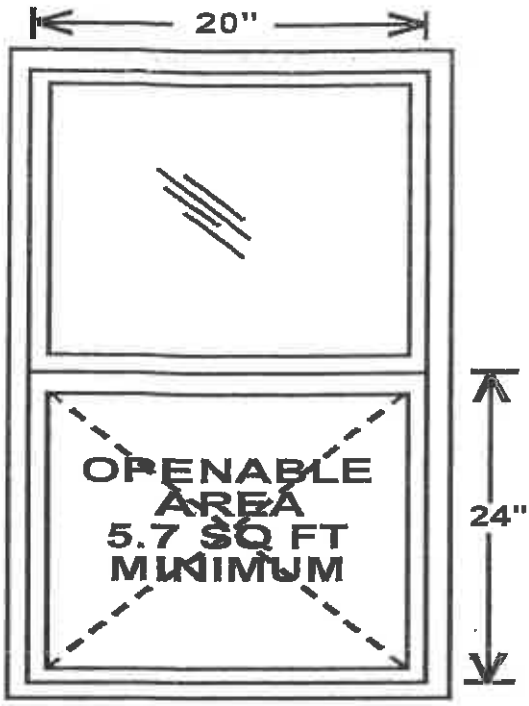
Minimum opening width. The minimum net clear opening width shall be 20 inches (508 mm).

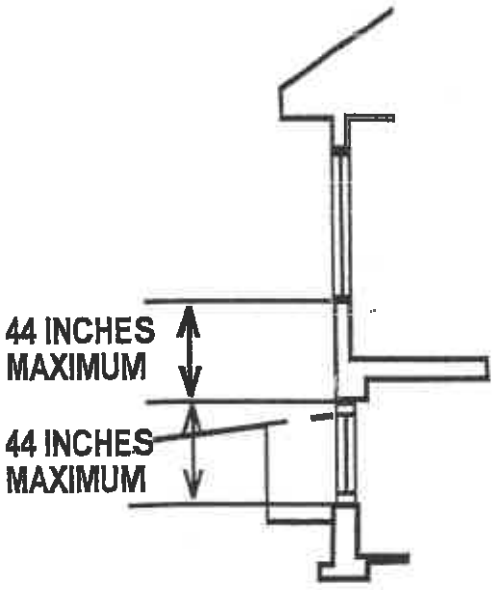
Operational constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools.

(Installations after March 31, 2003) Exception: Grade floor openings shall have a minimum net clear opening of 5 square feet. Grade floor opening is a window or other opening located such that the sill height of the opening is not more than 44 inches above or below the finished ground level adjacent to the opening.

Replacement window. Replacement windows installed in buildings meeting the scope of the International Residential Code shall be exempt from the requirements of Section R310.1.1, R310.1.2, and R310.1.3 if the replacement window meets the following conditions:

1. The existing height and width net clear opening shall not be reduced by more than 2 inches (51 mm) in either dimension.
2. The rooms or areas are not used for any Minnesota state licensed purpose.
3. The window is not required pursuant to the Minnesota Fire Code;
4. The sleeping room is not undergoing an addition, remodeling, or a change in occupancy; and
5. The window is not required to be replaced pursuant to a locally adopted housing, property maintenance, or rental licensing code.





ESCAPE continued

Window wells

Window wells required for emergency escape and rescue shall have horizontal dimensions that allow the door or window of the emergency escape and rescue openings to be fully opened. The horizontal dimensions of the window well shall provide a minimum net clear area of 9 square feet (0.84m^2) with a minimum horizontal projection and width of 36 inches (914 mm). **Exception:** The ladder or steps required by Section R310.2.1 shall be permitted to encroach a maximum of 6 inches (152 mm) into the required dimensions of the window well.

Bulkhead enclosures

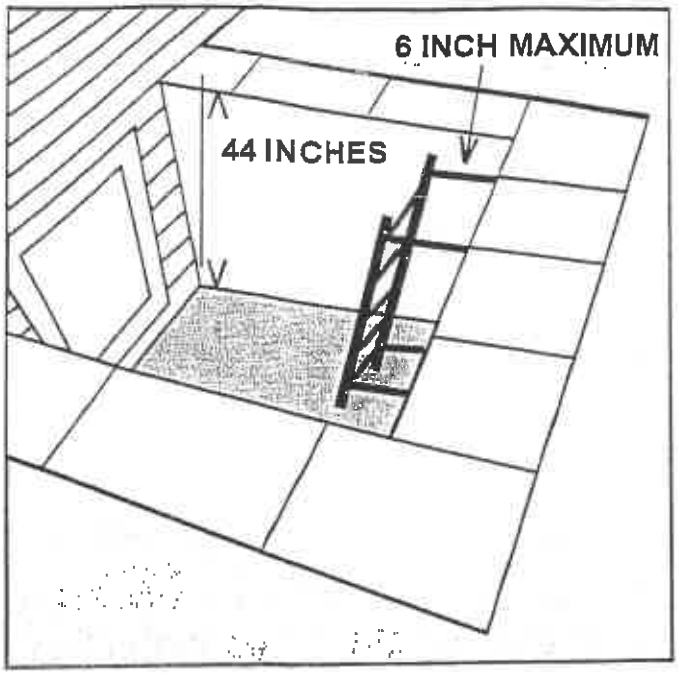
Bulkhead enclosures shall provide direct access to the basement. The bulkhead enclosure with the door panels in the fully open position shall provide the minimum net clear opening required by Section R310.1.1. Bulkhead enclosures shall also comply with Section R314.9. Bars, grills, covers, screens, or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size complies with Sections R310.1.1 to R310.1.3, and such devices shall be releaseable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the escape and rescue opening.

Ladder and steps

Window wells with a vertical depth greater than 44 inches (1118 mm) below the adjacent ground level shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Section R314 and R315. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center vertically for the full height of the window well.

Guard

Although the code does NOT specify requirements for guards around window wells to keep persons from falling into them, falls can and do occur. Because of the variations in size, location, and depth of window wells and since a guard could present an impediment to escape or rescue, the code is



silent. The potential for falls into a window well should be evaluated by the homeowner and suitable guards or visual barriers provided based on the location, depth and size of the well. Barriers, guards or covers installed to prevent falls must be placed in such a way that does not impede use of the window well for escape and rescue. If covers are used, the effects of snow on the ability to open or remove them in an emergency must also be evaluated.

The ever-increasing concern for security, particularly in residential buildings has created a fairly large demand for security devices such as grilles, bars and steel shutters. Unless properly designed and constructed, these security devices over emergency windows can completely defeat the purpose of the emergency escape and rescue window. The code makes provisions for use of security devices, provided the release mechanism has been approved by the building official and it is operable from the inside without the use of a key or special knowledge.

Fire deaths have been attributed to the inability of the individual to escape from the building because the security bars prevented emergency escape. Security devices should only be installed where absolutely necessary and only with a permit after an evaluation by your local building and fire official.

Building Permit Application
City of Proctor

100 Pionk Drive • Proctor, MN 55810 • (218) 624-3641

LOCATION OF BUILDING			
	Street Address		Parcel Code
	Subdivision		
	Block #	Lot #	Zone

For Office Use Only		
Ground Water Management/Wetlands	YES	NO
Drawings	YES	NO
Sanitary Check-Off	YES	NO
Plan Review	YES	NO
INSPECTIONS		
Footing		Date
Foundation		Date
Framing		Date
Mechanical		Date
Insulation/Vapor		Date
Final		Date

TYPE OF IMPROVEMENTS

- ☐ Manufactured Home
- ☐ Site-Built Home
- ☐ Residential Addition
- ☐ Residential Remodeling
- ☐ Residential Garage or Storage
- ☐ Commercial Building
- ☐ Commercial Addition
- ☐ Commercial Remodeling
- ☐ Demolition
- ☐ Sign

TYPE OF SEWER

- ☐ On-Site sewer disposal
- ☐ Public

TYPE OF WATER

- ☐ Well
- ☐ Public

DIMENSIONS

Lot Dimensions: _____ X _____

Lot Area: _____

Structure Size: _____ Sq. ft.

Yards of Fill: _____ Cu. yds.

VALUE OF PROJECT (Omit cents)

Contractor's Price	
Square foot value estimate	
Plumbing	
Heating/Air Conditioning	
Other	
Total	

Size			
Describe Project			
Owner	Address		Telephone
Architect	Address		Telephone
Contractor	Address		Telephone
Contractor License #			
Applicant's Signature		Permit Fee:	
Approved By		Plan Check Fee:	
Date	Receipt No. / Permit No.	State Surcharge:	
		TOTAL	

The owner of this building and the undersigned agree to all applicable laws of PROCTOR, MN and to allow access to said property by Proctor Building officials and Planning and Zoning Commissions. It is the applicants/property owners responsibility to build on their own property and call for required inspections.

City of Proctor

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Required Inspections

In accordance with the Minnesota State Building Code, it is the duty of the person doing work authorized by a permit to notify the appropriate official that such work is ready for inspection. It is also the duty of the person requesting the inspection to provide access to and a means for completion of the inspections. Allow a minimum of 24 hours notice for inspections.

FOOTING/ENGINEERED SLAB INSPECTIONS: Prior to pouring any concrete, all footing and formwork, including reinforcement and miscellaneous embedments must be inspected.

FOUNDATION WALL INSPECTIONS: Poured concrete walls must be inspected prior to pouring concrete. All foundation walls must be inspected prior to backfilling.

SITE UTILITY INSPECTIONS: All site utilities, including the water service, sanitary sewer/septic system(s), storm sewer etc. must be inspected and/or tested by the appropriate authority having jurisdiction prior to covering or concealment.

PLUMBING, MECHANICAL, ELECTRICAL AND FIRE SPRINKLER SYSTEM WORK: All plumbing piping, including waste/vent and water piping must be inspected prior to concealment. All mechanical ductwork, fire dampers, flues, controls and equipment, and gas, hydronic and process piping must be inspected prior to concealment. All electrical wiring, controls and equipment must be inspected prior to concealment.

INSULATION/ENERGY CODE COMPLIANCE INSPECTION: All required exterior envelope insulation and vapor barriers and all required duct and convection pipes and apparatuses must be insulated and approved prior to concealment.

FIRESTOPPING INSPECTION(S): All penetrations of any fire-resistive membrane, including walls, floors, roofs, ceilings, etc. must be inspected for proper placement and installation of the required fire-stop system. All sealing of fire-rated penetrations must be inspected and approved prior to concealment.

STRUCTURAL/FRAME INSPECTION: All framework, structural and non-structural, must be inspected and approved prior to covering. **All rough-in mechanical, (i.e., plumbing, electrical, mechanical, fire sprinklers, etc.) must have already been inspected and approved at this stage of work also.**

HEALTH DEPARTMENT INSPECTIONS: Inspections by Health Department personnel may be required for commercial kitchen installations, food and beverage establishments and other associated operations. Verify required Health Department inspections with the State Health Department.

REQUIRED SPECIAL INSPECTIONS: In accordance with the Special Inspection Requirements of the code, it may be necessary for special inspectors to be employed to inspect such things as soils, concrete, steel reinforcing placement, structural welding and bolting, spray-on fireproofing, structural masonry construction, smoke control systems, pilings, caissons and other inspections as deemed necessary by the Architect and/or Engineer of record. Work requiring special inspections may not be covered/concealed until required inspections are complete and approved.

OTHER REQUIRED INSPECTIONS: Depending on the complexity of a building or structure and the equipment specified for installation, such as for elevators, the code may require or allow for other required inspections as deemed necessary by the authority having jurisdiction.

FIRE CODE INSPECTIONS: Applicable State Fire Code regulations must be completed and approved by the Fire Marshal prior to final inspection and occupancy of the building or structure.

FINAL INSPECTIONS: A final inspection will be required for all plumbing, electrical, mechanical, fire sprinklers, fire alarm, fire code, health and building code compliance issues. Upon successful completion and approval of all systems, a Certificate of Occupancy will be issued.

City of Proctor

100 Pionk Drive . Proctor, MN 55810 . (218) 624-3641

Building Code Requirements

Construction of and improvements to one and two family dwellings in the City of Proctor must be in accordance with the current Minnesota State Building Code, which includes the 2000 International Residential Code (IRC), and Proctor Zoning and Water Management Regulations. Copies of the IRC are available at the Minnesota Bookstore (651-297-3000) and for viewing in the Duluth Public Library. Applicable Minnesota Rules are available online at: http://www.buildingcodes.admin.state.mn.us/rules/rules.html.

Proctor City Code and Zoning Regulations are available online at: http://www.ci.proctor.mn.us.
The intent of this handout document is to summarize code requirements and regulations to assist in the planning of projects and preparation of construction documents. This is an extensive list, but it is a fraction of the information needed to plan and obtain a permit for residential construction. If you are doing construction requiring a permit, you **MUST** be familiar with applicable codes and ordinances. Submitted plans must indicate compliance with applicable requirements and regulations. The permit holder is responsible for ensuring that all elements are in compliance with all applicable codes and regulations, whether or not noted here.

DEFINITIONS **IRC R202**

Fire Separation Distance
The distance measured from the building face to the closest interior lot line, to the centerline of a street, alley or public way, or to an imaginary line between two buildings on the property. The distance shall be measured at right angles from the lot line.

Habitable Space.
A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

MINIMUM DESIGN LIVE LOADS **IRC 301**

Exterior balconies	-	60 psf
Decks	-	40 psf
Fire escapes	-	40 psf
Passenger vehicle garages	-	50 psf, except elevated garage floors shall support 2,000 lbs over 20 s.i.
Unfinished attics without storage	-	10 psf
Unfinished attics with storage	-	20 psf
Rooms other than sleeping rooms	-	40 psf
Sleeping rooms	-	30 psf
Stairs	-	40 psf or 300 lbs concentrated over 4 s.i., whichever produces greater stresses
Guardrails and handrails	-	200 lbs in a single concentrated load applied in any direction at any point along the top

CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA IRC 301, SBC 1309.0301

Ground Snow Load	-	60 psf
Roof Snow Load	-	42 psf
Wind Speed	-	90 mph
Wind Exposure Category	-	Determined on a site specific basis
Seismic Design Category	-	Not Applicable
Frost Depth	-	60 inches
Winter Design Temperature	-	-20 degrees F
Subject to Damage From: Weathering	-	Severe
Termites	-	Slight to moderate
Decay	-	None to slight

LOCATION ON LOT **IRC R302, Proctor Zoning Code**

Zoning Setback requirements are usually more restrictive than building code requirements.

Exterior Walls. Exterior walls with a fire separation distance less than 3' shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections (roof overhangs, etc.) shall not extend beyond the distance determined by the following two methods, whichever results in the lesser projections:

1. A point one-third the distance to the property line from an assumed vertical plane located where protected openings are required.
2. More than 12 " into areas where openings are prohibited (see below).

Projections (roof overhangs, etc.) extending into the fire separation distance shall have not less than one-hour fire resistive construction on the underside. The above provisions shall not apply to walls perpendicular to the line used to determine the fire separation distance.

Openings. Openings shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance less than 3'. This distance shall be measured perpendicular to the line used to determine the fire separation distance. Foundation vents installed in compliance with this code are permitted.

LIGHT, VENTILATION AND HEATING IRC R303

Habitable Rooms. Except where adequate artificial light is provided (6 footcandles at 30" above the floor), all habitable rooms shall be provided with glazing area of not less than 8% of the floor area of such rooms. Except where approved mechanical ventilation is provided, natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The minimum openable area to the outdoors shall be 4% of the floor area being ventilated.

Adjoining Rooms. For the purpose of determining light and ventilation requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room but not less than 25 square feet (2.32 m^2).

Bathrooms. Except where approved artificial light and ventilation are provided, bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 s.f., one-half of which must be openable. Ventilation air from the space shall be exhausted directly to the outside.

Stairway Illumination. All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway. An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section. The control for activation of the required interior stairway lighting shall be accessible at the top and bottom of each stair without traversing any step of the stair. The illumination of exterior stairs shall be controlled from inside the dwelling unit.

Required Glazed Openings. Required glazed openings shall open directly onto a street or public alley, or a yard or court located on the same lot as the building.

Required Heating. Every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68°F at a point 3' above the floor and 2' from exterior walls in all habitable rooms at the design temperature.

MINIMUM ROOM AREAS IRC R304

Minimum Area. Every dwelling unit shall have at least one habitable room that shall have not less than 120 s.f. of gross floor area. The Housing Code requires that for bedrooms occupied my more that one person at least 50 s.f. of floor area shall be provided for each.

Other Rooms. Other habitable rooms shall have a floor area of not less than 70 s.f., except every kitchen shall have not less than 50 s.f. of gross floor area.

Minimum Dimensions. Except kitchens, habitable rooms shall not be less than 7 feet in any horizontal dimension.

Height Effect on Room Area. Portions of a room with a sloping ceiling measuring less than 5 feet or a furred ceiling measuring less than 7 feet from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room.

CEILING HEIGHT — IRC R305, 1309.0305

Minimum Height. Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms and basements shall have a ceiling height of not less than 7 feet. The required height shall be measured from the finish floor to the lowest projection from the ceiling with the following exceptions:

1. Beams and girders spaced not less than 4' on center may project not more than 6" below the required ceiling height.

2. Ceilings in basements without habitable spaces may project to within 6'-8" of the finish floor; and beams, girders, ducts or other obstructions may project to within 6'-4" of the finished floor.

3. Not more than 50% of the required floor area of a room or space is permitted to have a sloped ceiling less than 7' in height with no portion of the required floor area less than 5' in height.

SANITATION — IRC R306

Toilet Facilities. Every dwelling unit shall be provided with a water closet, lavatory, and a bathtub or shower.

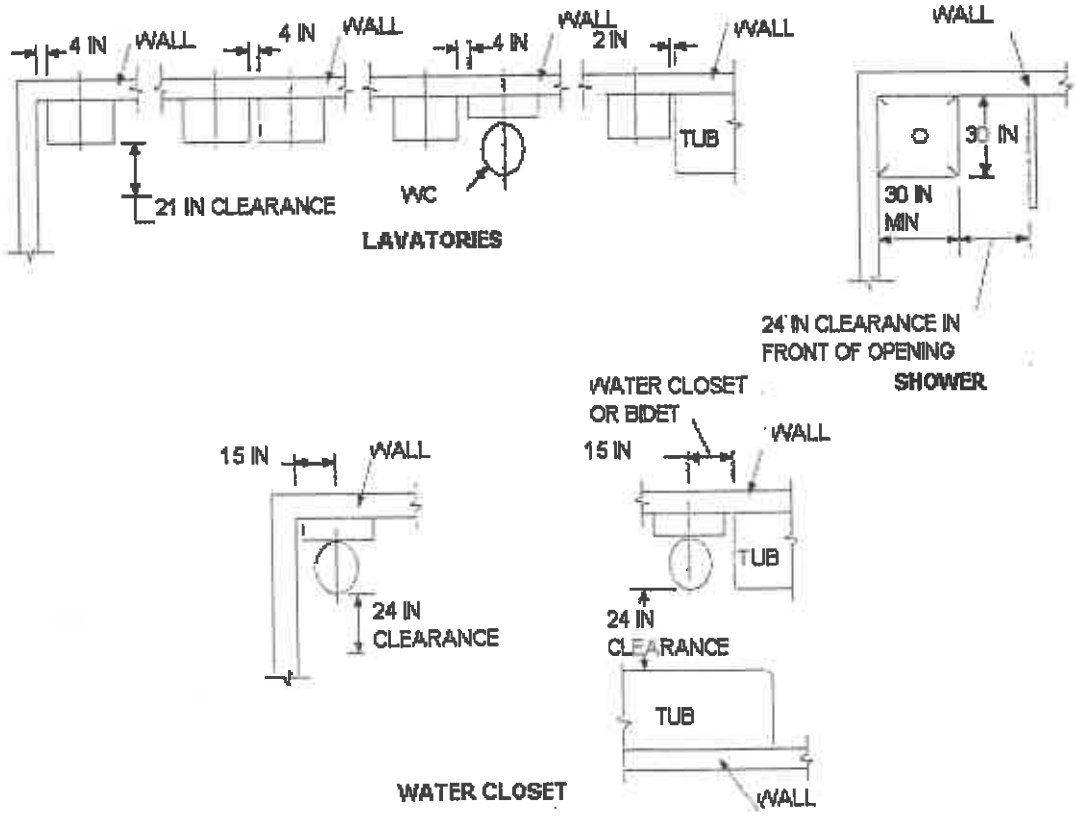
Kitchen. Each dwelling unit shall be provided with a kitchen area and every kitchen area shall be provided with a sink.

Sewage Disposal. All plumbing fixtures shall be connected to a sanitary sewer or to an approved private sewage disposal system.

Water Supply to Fixtures. All water fixtures shall be connected to an approved water supply. Kitchen sinks, lavatories, bathtubs, showers, bidets, laundry tubs and washing machine outlets shall be provided with hot and cold water.

TOILET, BATH AND SHOWER SPACES — IRC R307, MN Plumbing Code 4715.1220

Space Required. Fixtures shall be spaced as per the following diagram:



Bathtub and Shower Spaces. Bathtub and shower floors and walls above bathtubs with installed showerheads and in shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 6" above the floor.

SAFETY GLASS (GLAZING) IRC R308

Hazardous Locations. The following shall be considered specific hazardous locations for the purposes of glazing:

1. Glazing in side-hinged doors except jalousies.

2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bi-fold closet door assemblies.

3. Glazing in storm doors.

4. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any part of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60" measured vertically above any standing or walking surface.

5. Glazing, in an individual fixed or operable panel adjacent to a door where the nearest vertical edge is within a 24" arc of the door in a closed position and whose bottom edge is less than 60" above the floor or walking surface.

6. Glazing in an individual fixed or operable panel, other than those locations above, that meets all of the following conditions:

- Exposed area of an individual pane greater than 9 s.f..
- Bottom edge less than 18" above the floor.
- Top edge greater than 36" above the floor.
- One or more walking surfaces within 36" horizontally of the glazing.

7. All glazing in railings, regardless of an area or height above a walking surface. Included are structural baluster panels and nonstructural in-fill panels.
8. Glazing in walls and fences enclosing indoor and outdoor swimming pools, hot tubs and spas where the bottom edge of the glazing is less than 60" above a walking surface and within 60" horizontally of the water's edge. This shall apply to single glazing and all panes in multiple glazing.

9. Glazing in walls enclosing stairway landings or within 60" of the top and bottom of stairways where the bottom edge of the glass is less than 60" above the walking surface.

Identification. Each pane of glazing installed in hazardous locations shall be provided with a manufacturer's or installer's label, designating the type and thickness of glass and the safety glazing standard with which it complies, which is visible in the final installation. The label shall be acid etched, sandblasted, ceramic-fired, embossed mark, or shall be of a type which once applied cannot be removed without being destroyed.

Requirements for glazing are addressed in the state building code. See 2000 International Residential Code Section R308 for complete requirements and exceptions.

ATTACHED GARAGES AND CARPORTS IRC R309

Foundations. See FOUNDATIONS section below.

Opening Protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8" in thickness, solid or honeycomb core steel doors not less than 1-3/8" thick, or 20-minute fire-rated doors.

Duct Penetration. Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall have no openings into the garage.

Separation Required. The garage shall be separated from the residence and its attic area by not less than ½" gypsum board applied to the garage side. Where the separation is a floor-ceiling assembly, the structure supporting the separation shall also be protected by not less than ½" gypsum board or equivalent.

Floors. Garage floors shall be of minimum 5" thickness and surfaces shall be of approved noncombustible material. The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain. Garage floors can be moved with the affects of frost. Allow this movement to be independent so it does not affect other elements of the structure. Pour garage floor separate from foundation and place walls directly on the foundation.

Carports. Carports shall be open on at least two sides. Carport floor surfaces shall be of approved noncombustible material, except asphalt surfaces shall be permitted at ground level in carports. Carports not open on at least two sides shall be considered a garage and shall comply with the provisions of this section for garages.

EGRESS WINDOWS — IRC R310, SBC 1309.0310

Emergency Escape and Rescue Openings. Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening for emergency escape and rescue. Where openings are provided as a means of escape and rescue, they shall have a sill height of not more than 44" above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening it shall be provided with a bulkhead enclosure. The net clear opening dimensions required by this section shall be obtained by the normal operation of the window or door opening from the inside. Escape and rescue window openings with a finished sill height below the adjacent ground elevation shall be provided with a window well. A minimum ceiling height of 48" shall be maintained above the exterior grade from the exterior wall to a public way.

Minimum Opening Area. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 s.f., except grade floor openings shall have a minimum net clear opening of 5 s.f.

Minimum Opening Height and Width. The minimum net clear opening height shall be 24". The minimum net clear opening width shall be 20".

Operational Constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools.

Replacement Windows. If the replacement window meets the following conditions, it need not comply with egress window requirements:

- The existing height and width net clear opening shall not be reduced by more than 2" in either dimension;
- The rooms or areas are not used for any Minnesota state licensed purpose;
- The window is not required by the Minnesota Fire Code;
- The sleeping room is not undergoing an addition, remodeling, or a change in occupancy; and
- The window is not required to be replaced by the Proctor City Code

Window Wells. Window wells for emergency escape and rescue shall have horizontal dimensions that allow the door or window of the emergency escape and rescue opening to be fully opened. The horizontal dimensions of the window well shall provide a minimum net clear area of 9 s.f., with a minimum horizontal projection and width of 36". The required ladder or steps shall be permitted to encroach a maximum of 6" into the required dimensions of the window well. Footing depth below grade must be maintained at window well locations.

Ladder and Steps in Window Wells. Window wells with a vertical depth greater than 44" below the adjacent ground level shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or rungs shall have an inside width of at least 12", shall project at least 3" from the wall and shall be spaced not more than 18" on center vertically for the full height of the window well.

Bulkhead Enclosures. Bulkhead enclosures shall provide direct access to the basement. The bulkhead enclosure with the door panels in the fully open position shall provide the same minimum net clear opening required for egress windows.

Bars, Grills, Covers and Screens. Bars, grills, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size equals that required for egress windows. Release or removal shall be from the inside and shall not require the use of a key or other tool or force greater than that which is required for normal operation of the escape and rescue opening.

EXISTS — IRC R311, SBC 1309.0311

Exit Doors. Not less than one exit door shall be provided from each dwelling unit. The required exit door shall provide direct access from the habitable portions of the dwelling to the exterior without requiring travel through a garage. All egress doors shall be readily openable from the side from which egress is to be made without the use of a key or special knowledge or effort. The required exit door shall be a side-hinged door not less than 3' in width and 6'-8" in height. Other exterior hinged or sliding doors shall not be required to comply with these minimum dimensions.

Hallways. The minimum width of a hallway shall be not less than 3 feet.

Exit facilities. Exterior exit balconies, stairs and similar exit facilities shall be positively anchored to the primary structure to resist both vertical and lateral forces. This attachment shall not be accomplished by use of toenails or nails subject to withdrawal.

LANDINGS — IRC R321, SBC 1309.0312

Landings for Stairways. There shall be a floor or landing at the top and bottom of each stairway, except at the top of an interior flight of stairs, provided a door does not swing over the stairs.

Landings at Doors. There shall be a floor or landing on each side of each exterior door. The floor or landing at a door shall not be more than 1.5" lower than the top of the threshold, except the landing at an exterior doorway shall not be more than 8" below the top of the threshold, provided that the door, other than an exterior storm or screen door, does not swing over the landing.

Size. The width of each landing shall not be less than the stairway or door served. Every landing shall have a minimum dimension of 36" measured in the direction of travel.

RAMPS — IRC R313

Ramps shall have a maximum slope of one unit vertical in eight units horizontal (12.5%). Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33%). A minimum 3' x 3' landing shall be provided at the top and bottom of ramps, where doors open onto ramps and where ramps change direction.

STAIRWAYS — IRC R314, SBC 1309.0314

Stairways. Stairways shall not be less than 36" in clear **width** at all points above the permitted handrail height and below the required headroom height. **Handrails** shall not project more than 4.5" on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5" where a handrail is installed on one side and 27" where handrails are provided on both sides. The maximum **riser height** shall be 8" and the minimum tread depth shall be 9". The riser height shall be measured vertically between leading edges of the adjacent treads. The **tread depth** shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2%). The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8". The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8". Open risers are permitted, provided that the opening between treads does not permit the passage of a 4" dia. sphere. The minimum **headroom** in all parts of the stairway shall not be less than 6'-8" measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing or platform.

Requirements for Winders, Spiral Stairs and Circular Stairways are addressed in the state building code. See Minnesota State Building Code Section 1309.0314 for complete requirements.

Stairway Illumination. All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the located in the immediate vicinity of the bottom landing of the stairway. An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section. The control for activation of the required interior stairway lighting shall be accessible at the top and bottom of each stair without traversing any step of the stair. The illumination of exterior stairs shall be controlled from inside the dwelling unit.

Under Stair Protection. Enclosed accessible space under stairs shall have walls, under stair surface, and soffits protected on the enclosed side with ½" gypsum board.

HANDRAILS — IRC R315, SBC 1309.0315

Handrails. Handrails having minimum and maximum heights of 34" and 38", respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of stairways. All required handrails shall be continuous the full length of the stairs with four or more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight. Ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1.5" between the wall and the handrail. Handrails may be interrupted by a newel post at a turn. The use of volute, turnout, or starting easing is allowed over the lowest tread. Design live load 200 lbs.

Handrail Grip Size. The handgrip portion of handrails shall have a circular cross section of 1-1/4" minimum to 2-5/8" maximum. Other handrail shapes that provide an equivalent grasping surface are permissible. Edges shall have a minimum radius of 1/8".

GUARDS **IRC R316, 1309.0316**

Guards Required. Porches, balconies or raised floor surfaces located more than 30" above the floor or grade below shall have guards not less than 36" in height. Open sides of stairs with a total rise of more than 30" above the floor or grade below shall have guards not less than 34" in height measured vertically from the nosing of the treads. Design live load 200 lbs. . . . .

Guard Opening Limitations. Required guards on open sides of stairways, raised floor areas, balconies, and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4" diameter, except the triangular openings formed by the riser, tread, and bottom rail of a guard at the open side of a stairway are permitted to be of a size such that a 6" sphere cannot pass through.

SMOKE ALARMS **IRC R317, SBC 1309.0317**

Single-and Multiple-Station Smoke Alarms. Single-and multiple-station smoke alarms shall be installed in the following locations:

- In each sleeping room.
- Outside of each separate sleeping area in the immediate vicinity of the bedrooms
- On each additional story of the dwelling, including basement and cellars but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. All smoke alarms shall be listed and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

Alterations, Repairs or Additions. When interior alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be provided with smoke alarms located as required for new dwellings; the smoke alarms shall be interconnected and hardwired. Smoke alarms in existing areas shall not be required to be interconnected and hardwired where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is a crawl space or basement available which could provide access for hardwiring and interconnection without the removal of interior finishes. Smoke alarms are not required where work is on the exterior which does not require entry into the interior for inspection.

FOAM PLASTIC **IRC R318, SBC 1309.0318**

Thermal Barrier. All foam plastic or foam plastic cores in manufactured assemblies used in building construction shall have a flame- spread rating of not more than 75 and shall have a smoke-developed rating of not more than 450 and, except where otherwise noted, shall be separated from the interior of a building by minimum 1/2- gypsum board or an approved finish material equivalent to a thermal barrier. Reliance on adhesives to ensure that the gypsum board will remain in place when exposed to fire shall be prohibited.

Attics and Crawlspaces. Within attics and crawlspaces where entry is made only for service of utilities, foam plastics shall be protected against ignition by 1-1/2-inch-thick mineral fiber insulation, 1/4-inch-thick wood structural panels, 3/8-inch particleboard, 1/4-inch hardboard, 3/8-inch gypsum board, or corrosion-resistant steel having a base metal thickness of 0.016 inch.

Rim Joist Area. Foam plastic shall be permitted to be spray-applied to a sill plate and header (rim joist) without thermal barrier if all of the following conditions exist:

- The maximum thickness of the foam plastic shall not exceed 3-1/4".
- The density of the foam plastic shall be between 1.5 and 2.0 pcf.
- The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke developed index of 450 or less when tested in accordance with ASTM E84.

Spray Foam Insulation requires specific approval for each project for the proposed use. Technical data and test results shall be submitted for review by the Building Official at the time of building permit application.

VAPOR RETARDERS **SBC 1309.0322, MN Rules Ch. 7670, MN Rules Ch. 7672**

Vapor barriers. In all framed walls, floors, and roof / ceilings comprising elements of the building thermal envelope, a vapor retarder shall be installed on the warm-in-winter side of the insulation, except in construction where moisture or freezing will not damage the materials.

ENERGY CODE

MN Rules Ch. 7670, MN Rules Ch. 7672

New detached one and two family dwellings must comply with the current Minnesota Energy Code. Compliance forms are available at Proctor City Hall. Alternatively, ResCheck design and compliance software is available online at http://www.energycodes.gov/rescheck/.

FOUNDATIONS

IRC CH. 4, SBC 1303.1900, MN Rules Ch. 7670, MN Rules Ch. 7672

Plans. Wall thickness, height of unbalanced backfill, soil classification, reinforcing and anchorage specification must be clearly shown on plans for all foundation types.

Frost Depth. Minimum depth to bottom of footing in Proctor is 60".

Anchorage. The wood sole plate at exterior walls shall be anchored to the foundation with anchor bolts spaced max. 6' o.c. Anchor bolts shall also be located within 12" from the ends of each plate section. Bolts shall be at least ½" in diameter, and shall extend a minimum of 7" into masonry or concrete and when installed in masonry shall be grouted in place with at least one inch of grout between the bolt and the masonry. Anchor bolts shall align with required vertical reinforcing. Interior bearing wall sole plates on monolithic slab foundations shall be positively anchored with approved fasteners.

Reinforcing Bars are concrete encased electrodes and must be grounded per NEC 250.50 and 250.52.

Poured Concrete Foundations must comply with the referenced codes or be designed and plans stamped by a Minnesota licensed Engineer. Compliance with SBC 1303.1900 requires minimum 8" poured wall, reinforced, with many other conditional requirements.

Masonry Foundations must comply with the referenced codes or be designed and plans stamped by a Minnesota licensed Engineer. Compliance with SBC 1303.1900 requires minimum 12" hollow unit masonry, reinforced, with many other additional requirements. Where masonry foundations are not waterproofed below grade, to minimize water intrusion into block cells which can freeze, expand and break block, best practice is use of 3-hole block with all cores fully filled.

Insulated Concrete Form (ICF) foundations must comply with the referenced codes or be designed and plans stamped by a Minnesota licensed Engineer.

Wood Foundations must be designed and plans stamped by a Minnesota licensed Engineer unless a soils report is submitted by a Geo-Technical Engineer classifying the soil and site conditions in which the foundation will be constructed within the limitations of the provisions of IRC Ch. 4. Design and complete plans, specifications and calculations required clearly showing compliance with IRC Ch. 4.

Frost Protected Shallow Foundations must comply with the referenced codes or be designed and plans stamped by a Minnesota licensed Engineer.

Soils are a component of the design of any foundation. Soils in Proctor typically do not fall within the prescriptive provisions set forth in the referenced codes. The result of this fact is that either an Engineer must design foundations or a soil correction must be made. Soil must be addressed on plans, that is, if a soil correction is to be made, a specification must be noted on construction documents.

Waterproofing. Basements must be waterproofed as required in R406. Any product proposed that is not prescribed in this section must be approved and must be specified on construction documents.

Drainage. Foundation drainage is required below the floor on both sides of footings. Perforated pipe on minimum 2" washed gravel or crushed rock larger than pipe openings and covered with 6" of the same material. Discharge must be to daylight or a sump. Install weepers through upper ½ of footing to allow flow to interior drain.

Exterior foam insulation must be protected above grade and to 6" below grade.

FLOORS

R506

Concrete floors in living areas shall have a minimum 4" thickness. A vapor barrier is required under concrete floors. Fill material shall be free of vegetation and foreign material, compacted to ensure uniform support and shall not exceed 24 " for clean sand and gravel and 8 " for earth. A 4" thick base course of clean graded sand, gravel or crushed stone shall be placed on the prepared sub-grade when the slab is below grade.

Under-Floor Space. Ventilation is required with minimum net openings of 1/150 s.f. The required area may be reduced if a vapor barrier covers the ground. Openings are not required if the under-floor area is within the envelope for conditioned air. An access opening is required min. 18" x 24".

Floor Framing Plans must be submitted with construction documents for plan review. Where engineered lumber products are to be used, engineered plans must be submitted.

WALLS IRC Chapter 6 and 7, MN Energy Code

Plans. A wall section must be submitted with construction documents depicting all components of the proposed wall assembly. Building codes do not address bearing walls greater than ten feet in height in requirements for conventional light frame construction, so plans must show design for applied loads.

FLASHING R703.8

Approved corrosion-resistive flashing shall be provided in the exterior wall envelope in such a manner as to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. The flashing shall extend to the surface of the exterior wall finish and shall be installed to prevent water from reentering the exterior wall envelope. Flashing shall be installed in the locations required in R703.8. Window and door flashing shall be according to manufacturer's instructions. Instructions shall be available on job site for inspectors.

DECKS

Deck informational packet is available with complete application and instructions in Proctor City Hall.

Permit Required for decks attached to a structure or any deck more than 30 inches above grade. Application and submittal requirements available in the Building Inspection Department, Proctor City Hall.
Setback Requirements. Always site specific. Check with Proctor Zoning for your project.
Decking Material. Heartwood or sapwood from redwood, cedar or other decay and termite resistant wood or treated wood is required. Use 1" decking if joists are at 16" o.c. or less. Use 2" if joists are more than 16" o.c.
Wood. Exposed wood must be of heartwood or sapwood from redwood, cedar or other decay and termite resistant wood or treated wood.
Fasteners and Connections. Some treated wood requires **Hot-Dig Galvanized or Stainless** steel fasteners, hangers, and connectors.
Ledger. Same size as joists. Install lag screws that penetrate 1-1/2" minimum into rim joist or wall studs. A minimum of two 3/8 inch lag screws every 16 inches. Joist hangers must be correct size for joist size used. Connections between deck and dwelling shall be weatherproof. Cuts in exterior finish shall be flashed.
Joists. See *JOIST SPAN* table for minimum joist size and spacing requirements. Ask your lumber supplier about species and grade.
Beams. See *BEAM AND FOOTING SIZES* table for beam size and spacing requirements. Any splices in beam must be over a support. Beams of 2 or more members shall be nailed together with 2 rows of 16d nails at 16" o.c. Ask your lumber supplier about wood species and grade.
Post Size. 3-1/2 inch minimum, depending on method of beam connection.
Cantilevers. Joists should not overhang beams by more than 2 feet, nor should beams over hang joists by more than 1 foot unless a special design is approved.
Footings. See *BEAM AND FOOTING SIZES* table for footing size and spacing requirements. Minimum thickness of footing pad is 8 inches but thicker required for larger footings (see chart). Minimum depth to bottom of footing is 5 feet. Reinforcing of footing pad may be recommended.
Columns (piers, pilasters). Minimum diameter is 8 inches. Post connection by pin or approved fastener. Reinforcing may be recommended.
Guardrails. Required where deck floor height above grade is 30 inches or more. Minimum guardrail height for decks accessory to one or two family dwellings is 36 inches. Minimum guardrail height for decks accessory to other dwellings is 42 inches. Distance between bottom of guardrail and deck floor must be less than 4 inches. Where guardrail is adjacent to a stair, a sphere 6 inches in diameter may not pass through the triangular opening created by the guardrail, riser and tread. Balusters must be spaced less than 4 inches apart.
Handrails. At least one handrail is required where stairs have more than 3 risers. Height must be 34 to 38 inches above the nosing of the tread. Ends must be returned or terminate in posts. Handgrips shall be between 1-1/4 and 2 inches in cross section or have an equivalent gripping surface and shall have a smooth surface with no sharp corners.
Stair Width. Minimum 36 inches.
Riser Height. Maximum 8 inches for stairs accessory to one or two family dwellings. MN SBC requirements address other dwellings. Openings in risers between treads shall be less than 4 inches.
Tread Width. Minimum 9 inches for stairs accessory to one or two family dwellings. MN SBC requirements address other dwellings.
Landing Size. Minimum 3 feet x 3 feet required at egress door. Where required, landing may not be more than 8 inches below top of threshold.

DETACHED GARAGES

Garage informational packet is available with complete application and instructions in Proctor City Hall.

City of Proctor

100 Pionk Drive . Proctor, MN 55810 . (218) 624-3641

Waterproofing of Residential Basement Walls

The 2000 edition of the International Residential Code, which is the effective code in the City of Proctor for all residential construction, states:

R-406.2
Foundation walls that retain earth and enclose habitable or usable spaces located below grade shall be waterproofed with a membrane extending from the top of the footing to the finished grade. The membrane shall consist of 2-ply hot moped felts, 55 pound roll roofing, 6-mil polyvinyl chloride, 6-mil polyethylene, 40-mil polymer-modified asphalt or equivalent material (see Exception for ICF walls). The joints in the membrane shall be lapped and sealed with an adhesive compatible with the waterproofing membrane.

Foundation walls may be waterproofed using materials or methods of construction other than covered in this section where approved by the Building Official.

For purposes of waterproofing requirements, usable space below grade where the ceiling height is 7'-0" or more will be considered habitable.

Upon application for a building permit for residential construction where basement ceiling heights equal or exceed 7'-0", **the means for complying with IRC R406.2 must be indicated and specified on the plans.**

The Building Official must approve methods not prescriptively described in the code. **Product information and instructions for application of the product must be submitted in writing to the Building Inspection Department for review and approval.**

Permits will not be approved until the waterproofing method has been reviewed and approved.

City of Proctor

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Energy Code / Building Envelope For Residential Additions

Cookbook Compliance Method

Additions to detached one and two family dwellings must be constructed in compliance with Minnesota Rules 7670, Category Two or Chapter 7672

Plans and specifications submitted with application for a building permit for additions to detached one and two family dwellings must include:

- Exterior envelope component materials (outlined below)
- U-factors for windows, doors and skylights (from manufacturer's label)
- R-values of insulating materials (minimum requirements outlined below)
- Wall assembly (stud size and spacing, cavity insulation and sheathing)

Provide the following information:

Project Address

Owners Name

Contractor's Name

What is the gross wall area above grade of the addition?
(Do not subtract window and door from this number)

What is the total area of windows and doors in the addition?

What is the average U-factor of the windows in the addition?
(If you do not know this value, contact your supplier.
You are not ready to apply for your building permit if
You have not chosen windows.)

Exterior Envelope Components

Minimum requirements for all buildings subject to the provisions of Chapter 7670

Vapor Barrier Prevents diffusion of moisture into thermal insulation

- Required on warm side of walls, ceilings and floor rim joist areas
- 4 mil polyethylene used as interior air barrier also serves as vapor barrier

Interior Air Barrier Prevents leakage of moisture laden air into the building envelope

- Required continuous on warm side of insulated ceilings, walls and at floor rim joist (Must be sealed)
- Not required at concrete wall insulation or window, door and skylight rough openings
- Penetrations must be sealed
- 4 mil polyethylene used as vapor barrier also serves as air barrier if sealed

Windwash Barrier Prevents the intrusion of outdoor air

- Can be rigid or flexible unless specified
- Rigid windwash barrier required at exterior edge of exterior wall top plate
- Sealed windwash barrier required at floors, overhangs and floor rim joist separating conditioned from unconditioned spaces
- Uncovered framing joints, unsupported sheathing joints and sheathing penetrations must be sealed

Slab-On-Grade Floors

- Continuous perimeter insulation from top of slab to frost line or to bottom of slab then horizontally beneath the slab for a total distance equal to the design frost line (60")

Foundation Walls

- Insulation required from top of wall to the top of the footing
- Where foundation insulation is exterior, a coating finish is required from top to 6 inches below grade to protect insulation from sun and physical abuse.
- Where foundation insulation is interior, a moisture barrier must be located between the insulation and the foundation wall from top of footing to grade level.

Loose Fill Insulation

- Insulation I.D. must be provided and thickness markers or tags from bags attached to the attic card

Insulation Requirements

Minimum requirements for compliance by Cookbook method

Ceilings with Attics

- If 7 ½" energy heal truss is used or if full insulating value extends to outside of exterior wall, then R-38 is required
- Otherwise R-44 is required

Ceilings without Attics

- R-38 insulation between framing plus R-5 sheathing
- When an uninsulated attic is finished, the sloped cavity requires R-18 insulation.

Floors over Unheated Space

- R-24 required

Rim Joist Insulation

- R-19 required

Foundations

- Minimum R-10 required

Walls

- The required R-value of wall insulation depends on the total area of windows and doors compared to the total wall area and the insulating quality (U-factor) of the window used.

Reference Note 42

Vapor Barriers

What Is a Vapor Barrier?
Purposes of Vapor Barriers
Where Should the Vapor Barrier be Installed?
Vapor Barrier Materials
How to Vent the Water Vapor
House Wraps are Not Vapor Barriers

What Is a Vapor Barrier?

A vapor barrier is an impermeable membrane that blocks the flow of air through the building envelope. A vapor barrier is an essential part of the building envelope. Because the purpose of a vapor barrier is not obvious, this important component is often omitted or installed incorrectly.

The main purpose of a vapor barrier is preventing the passage of the water vapor that is contained in air. Vapor barriers and the insulation affect each other. They must both be installed so that they interact beneficially rather than harmfully.

Purposes of Vapor Barriers

The specific functions of vapor barriers are:

- ***protecting the envelope structure and insulation from condensation damage.*** Many wall materials are permeable to the flow of water vapor from inside to outside, or vice versa. As water vapor from the inside of the building moves outward through a wall on a cold day, it encounters progressively lower temperatures. At the point in the wall where the temperature of the air equals the dew point, the vapor starts to condense, and it keeps condensing from that point outward. Figure 1 illustrates this.

  Condensation damages all types of envelope structures. It rots wood structures, it rusts steel structural members and steel masonry reinforcements, and it causes freeze cracking of masonry. Installing a vapor barrier on the warm side of the envelope prevents water vapor from traveling through the wall, and thereby prevents condensation.

  The protective function of vapor barriers is not inherently related to insulation. Condensation can occur inside the envelope structure whether it is insulated or not. If water vapor condenses inside insulation, the dampness reduces thermal resistance, and may damage the insulation.

- ***preventing air leakage through the envelope.*** A well-installed vapor barrier prevents or greatly reduces air leakage through the envelope surfaces, although it does not reduce air currents inside the envelope structure itself. At the same time, the vapor barrier reduces air flow through the insulation, preserving the R-value. For more about this function, see Reference Note 40, Building Air Leakage. (As a matter of perspective, vapor barriers do nothing to reduce air leakage through the major envelope penetrations, such as doors, windows, roof hatches, and fan openings. These penetrations

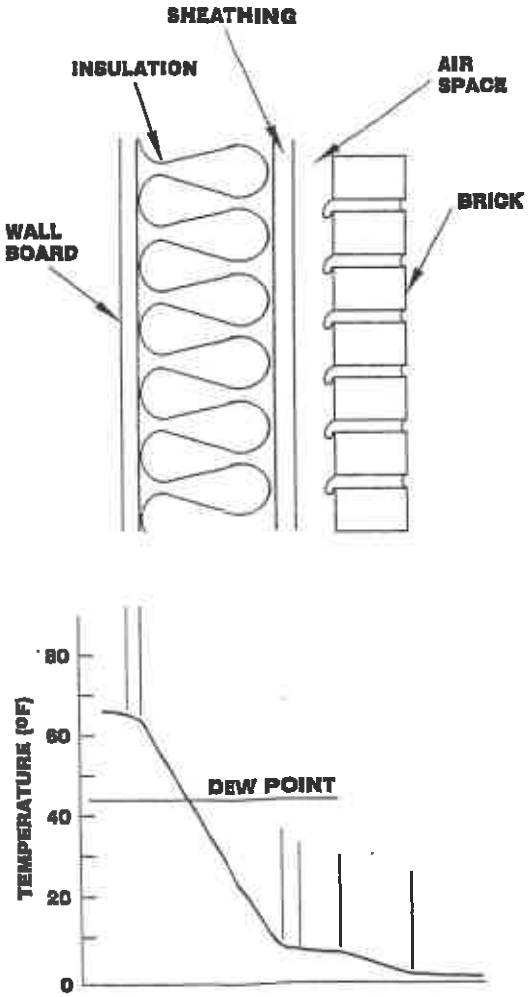


Fig. 1 Why building structures need vapor barriers This is a cross section of an insulated stud wall with an outer brick veneer. Below it is a graph of the temperature inside the wall. It is cold outside and warm inside. It is also humid inside. If water vapor can flow through the wall, it will reach a point at which it condenses. From that point outward, the wall is damp. A vapor barrier on the inner surface keeps the water vapor from flowing through the wall.

account for a majority of air leakage in most buildings.)

- *maintaining interior humidification.* If humidification is used, a vapor barrier reduces the amount of energy and water required to maintain the desired level of humidity.

Where Should the Vapor Barrier be Installed?

Vapor barriers must be installed on the warm side of the insulation. This is because condensation occurs as water vapor moves from the warm side of the wall to the cold side. If a vapor barrier is installed on the cold side, it traps moisture inside the envelope, making moisture problems worse.

This poses a dilemma in climates where the weather can be hot and humid in summer, but cold in winter. The deciding factor is how cold it gets. Where the winters are seriously cold, as in Minnesota, the best compromise is to install the vapor barrier on the inside. In humid climates where winter temperatures are mild, as in Houston, the best compromise probably is not to use a vapor barrier. If this decision is made, the envelope should be made of materials, such as masonry, glass, and aluminum, that withstand periodic dampening.

It might be tempting to solve this problem by installing a vapor barrier on both sides of the envelope. However, this is the worst approach. Vapor barriers on both sides of the envelope would almost certainly trap harmful amounts of moisture.

Vapor Barrier Materials

In principle, a vapor barrier can be any unbroken surface that is impermeable to water vapor. For example, a common vapor barrier material is polyethylene plastic film, typically installed in thicknesses from .002" to .008" (0.05 mm to 0.2 mm). This material is inexpensive, transparent, easy to handle, and is available in wide widths. It can be attached by stapling, mastic, and other means. Figure 2 shows a properly installed vapor barrier using this material.

Vapor barriers can be attached to permeable insulation, such as glass fiber batts or blankets. The vapor barrier is commonly in the form of impregnated kraft paper, sometimes with a thin foil layer. This type of vapor barrier is unreliable because there is no effective way to close the gap between adjacent lengths of insulation. Fold-over strips intended for overlapping the vapor barrier of adjacent batts are generally ignored by installers.

WESINC

Fig. 2 Perfectly installed insulation and vapor barrier This large room has wood stud walls and a wood rafter cathedral ceiling. Glass fiber batt insulation has been inserted snugly into the stud and rafter spaces, leaving no gaps. The tabs on the paper backing of the insulation are overlapped and closely stapled to the edges of the studs and rafters. A vapor barrier of 0.008" thick polyethylene sheet is stapled over the insulation. The vapor barrier is overlapped several feet at all joints. Plenty of excess plastic material is left in all corners. This slack keeps the plastic from being torn when the wallboard is installed. The vapor barrier is stapled to the window frames, preventing air leakage around the windows.

If the insulation material itself is very impermeable, such as extruded foam board insulation, it may act as its own vapor barrier. This characteristic is useful only if adjacent sheets of insulation are joined to create an unbroken surface. This requires special installation techniques that are difficult to enforce on the job.

Some envelope construction materials, such as asphalt roofing and sheetmetal walls, are impermeable. Therefore, they act as a vapor barrier, whether this is desirable or not. The critical question is whether these impermeable materials are located on the warm side of the insulation. If they are, they can serve as the vapor barrier. If not, they create a moisture venting problem that must be handled properly to prevent damage.

How to Vent the Water Vapor

When installing insulation, create a path for venting water vapor from the insulated cavity. A vapor barrier on the warm side of the envelope must be combined with a venting path on the cold side of the insulation. This is because no vapor barrier is perfect, and because water may get into the structure, typically from rain. In general, the better the vapor barrier and the drier the conditions, the less venting is required.

Effective venting is a challenge with roofs, because they are susceptible to leaks and have an impermeable outer surface. In buildings with attics, a common solution is to vent the attic to the outside. In cathedral ceilings, leave an air space above the insulation to allow water vapor to travel out to the vents, which should be installed along the full lengths of the ridges and eaves.

Venting walls and soffits is just as important, and the same principles apply. If there is an impermeable surface on the cold side of the insulation, such as a sheetmetal outer wall, leave a gap between the cold side of the insulation and this surface. The gap acts as a path for water vapor. In turn, vent this gap to the outside of the cold surface. Walls that can be wetted by precipitation require thorough venting.

At the other extreme, some wall materials are so porous that moisture may vent directly through the wall. Such material is especially vulnerable to rain soaking. Keep insulation away from direct contact with the wall. Generous roof overhangs are an excellent means of keeping walls dry, if the walls are not too tall.

Portions of the building that are located over soil have the problem of moisture migration into the building, rather than outward. The usual solution is to vent the crawl spaces to the outside, as with attics.

All insulated cavities where water may accumulate should have drains, as discussed in Reference Note 44, Insulation Integrity.

House Wraps are Not Vapor Barriers

"House wraps" are an item that goes through episodes of popularity. House wraps tend to be confused with vapor barriers, although their function is entirely

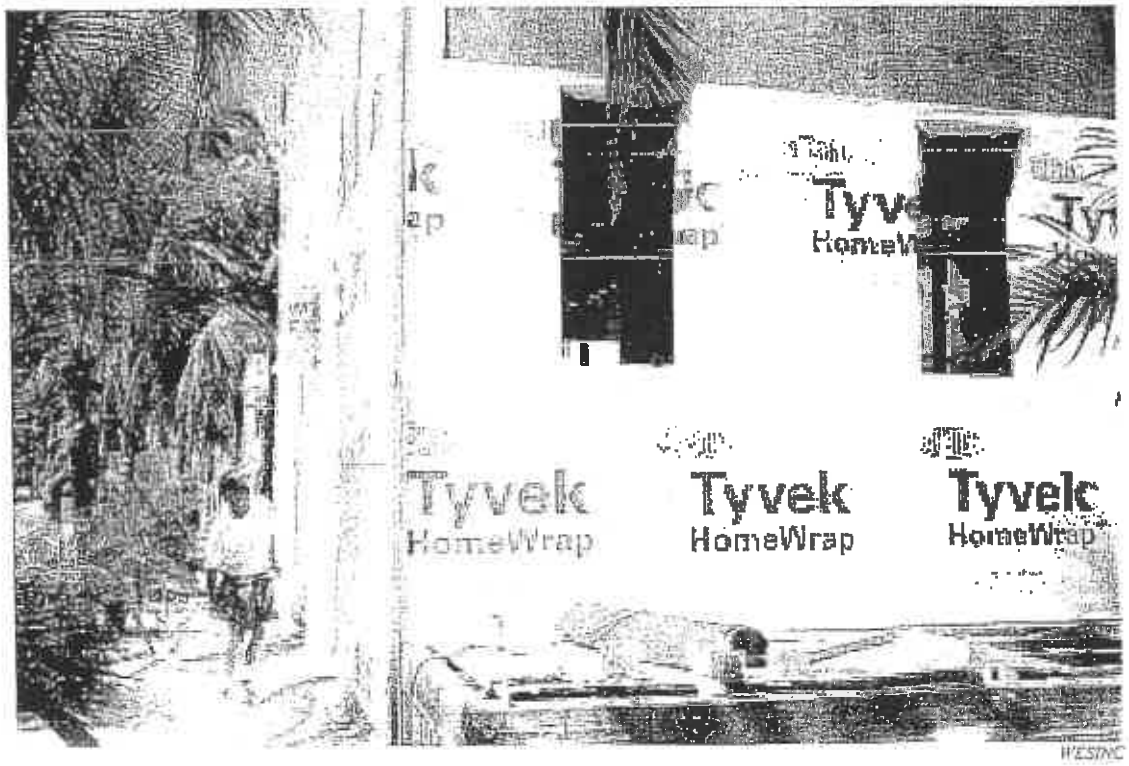


Fig. 3 This is not a vapor barrier This is a house wrap. It must be made of appropriate permeable material. Using vapor barrier material as a house wrap would cause moisture damage in the walls. The outer sheathing of this house is plywood. If the plywood is well installed, the house wrap is superfluous.

different. Using vapor barrier material as a house wrap can cause serious moisture damage to the structure. Conversely, house wrap material will not work as a vapor barrier.

The purpose of a house wrap is to prevent air infiltration through the building structure. It is always installed on the outer surface of the building. It plays the same role as a wind breaker in human clothing. As we said previously, one of the benefits of a vapor barrier is preventing air leakage. However, in most climates, vapor barriers are installed on the inner surface of the structure. Therefore, they do not protect the structure, or the insulation inside the structure, from heat loss that is induced by wind.

House wrap material must be permeable. Otherwise, it will act as a vapor barrier that is installed on the wrong side of the surface, and cause moisture damage. A common material used for house wrap is a fiber-reinforced paper. The material is stapled to the outer surface of the structure before installing the outer weather surface (siding, brick, etc.). Figure 3 shows a typical house wrap installation.

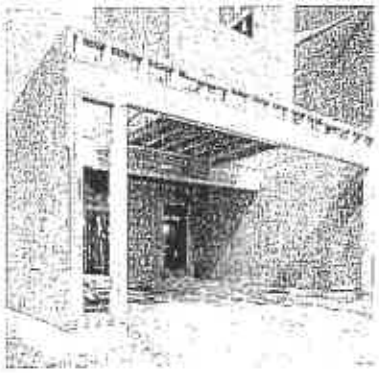
The fact that the material is permeable does not significantly interfere with its wind protection. It is like human clothing that protects from wind while allowing moisture to vent from the body.

We should ask whether house wraps are really needed. If a building is constructed properly, house wrap is superfluous. If the exterior sheathing is installed with sufficient care, it will shield the wall structure from wind. Furthermore, a building should not depend on a structural component that has a reliable life that is less than the life of the building. House wraps are fragile, compared to other structural materials. It is unlikely that they will survive for the life of the building, especially if the exterior surface that protects the house wrap will be replaced during the life of the building.

House wraps are not snake oil, but they have a limited range of useful application. They are most valuable when renewing the exterior of a house with leaky walls.

A SIMPLE SOLUTION FOR MEETING NARROW WALL BRACING REQUIREMENTS

The APA Narrow Wall Bracing Method gives builders the architectural flexibility of 16-inch-wide narrow wall segments, the structural integrity of code-approved bracing, and the ease of site-built, hold-down-free construction.



Modern builders face the challenge of meeting the conflicting demands of the architect and owner, and the building officials. While the designer and homeowner want large windows and doors coupled with narrow wall segments between the openings, building officials want to make sure the home meets International Residential Code (IRC) bracing requirements. Those requirements could mean 48-inch-wide walls where the design shows only 16 inches. The APA Narrow Wall Bracing Method meets code bracing requirements while reducing wall segments to as narrow as 16 inches next to window and door openings and requires no special components or connectors.

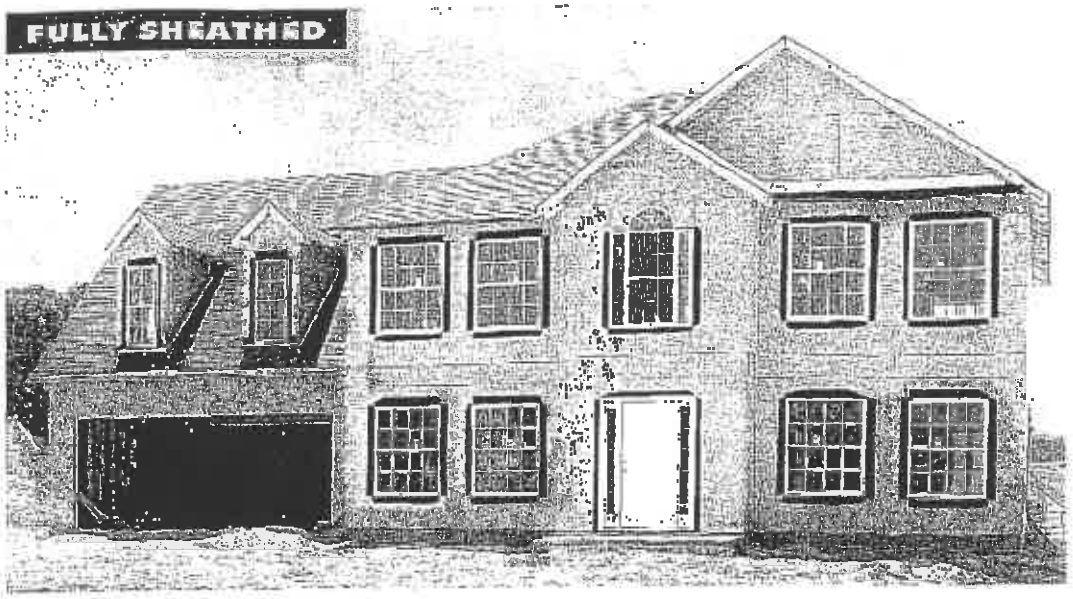
The APA Narrow Wall Bracing Method is simple: Fully sheath the exterior walls with plywood or OSB and install a header that extends beyond the opening. A fully sheathed (or, in IRC terms, "continuously sheathed") home provides superior structural performance over homes sheathed with non-structural products because the structural wood panels form a strong, stiff shell. Once lapped by wall sheathing, the header/sheathing combination forms a semi-moment-resisting frame, or portal frame, which provides superior resistance to wind and earthquake forces. By using this system, braced wall segments can be as narrow as 16 inches wide and hold-downs are not required. See Figures 1, 3, and 4 for construction details.

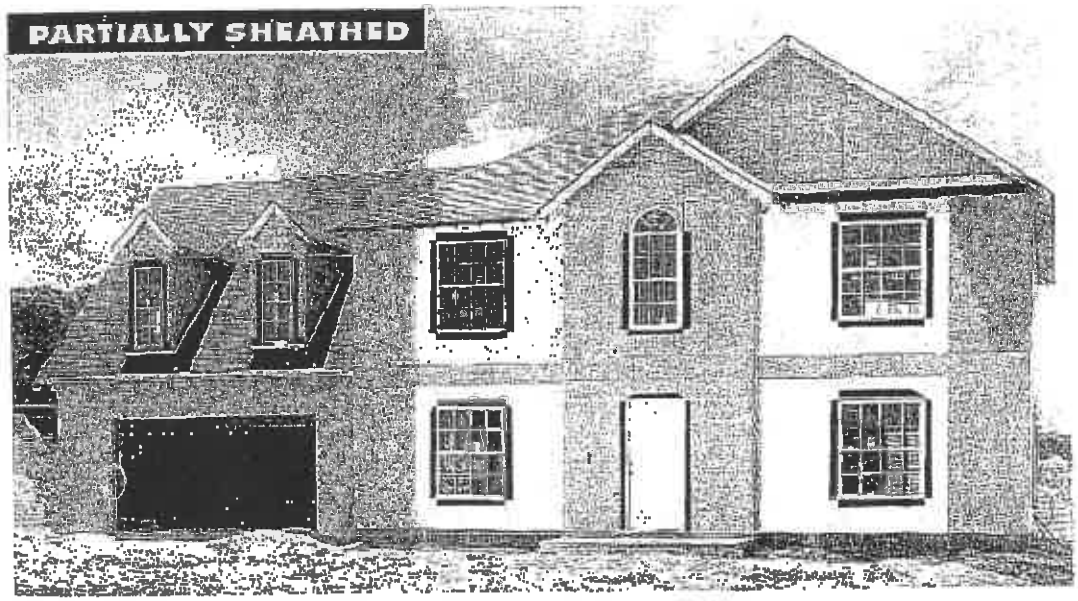
The APA Narrow Wall Bracing Method's application over rigid foundations received code acceptance in the 2004 Supplement to the International Codes Section R602.10.6.2.

WHY IS WALL BRACING SO IMPORTANT?

The IRC addresses the structural needs of residences, and one such need is resistance to the natural forces acting against homes. Gravity is the vertical load that all homes are built to withstand, but homes must also resist lateral loads. Lateral loads, such as the forces induced by high wind or earthquakes, act in a horizontal direction on the walls of the home. Just as bearing walls and beams carry vertical loads, wall bracing and braced wall lines resist lateral loads, and just as a beam must be properly sized, so too must the wall bracing.

Modern homes are designed with taller walls, which catch more wind. They also have many windows, which decrease the force-resisting shell of the home. These elements mean wall bracing is more important today than it ever has been in the past. Proper wall bracing gives the home the ability to resist lateral load forces.





It's easy to see why designers and homeowners prefer narrow walls from the photo illustration comparing two IRC-approved wall bracing methods: fully sheathed and partially sheathed.

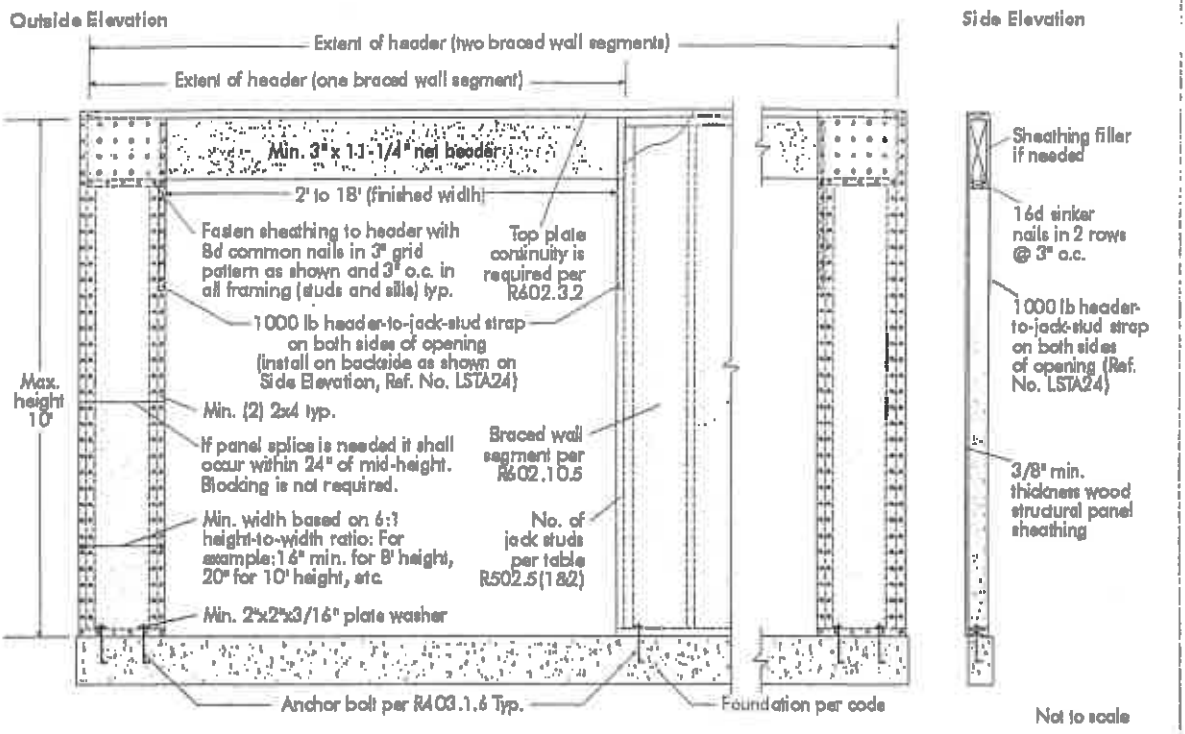
In the partially sheathed method, the IRC (Section R602.10) requires 4-foot-wide bracing segments near the corners of buildings and at prescribed intermediate points. Four-foot-wide bracing segments significantly reduce the wall space available for windows, doorways, and garage openings, making efficient house layout difficult for designers and homeowners alike.

Fortunately, the IRC permits narrow wall segments to count as bracing when the house is fully sheathed with wood structural panels. This bracing method, described in IRC Section R602.10.5, permits segments as narrow as 24 inches next to most windows. The APA method permits segments as narrow as 16 inches adjacent to openings such as garage doors, large windows, and sliding glass doors (see Table 1). This bracing option offers more design flexibility for houses, allowing more windows and doors, and making a lighter, more open-feeling interior.

CONSTRUCTION DETAILS FOR THE APA NARROW WALL BRACING METHOD

FIGURE 1

NARROW WALL OVER CONCRETE OR MASONRY BLOCK FOUNDATION

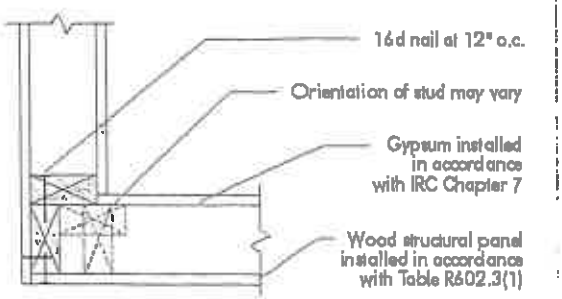


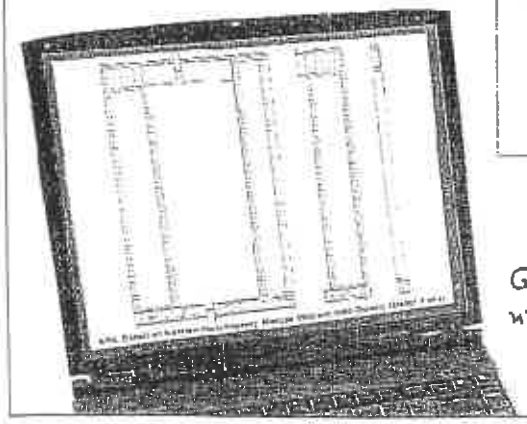
NOTE: This narrow wall bracing segment meets the minimum requirements for wall bracing (racking loads in the plane of the wall). The building designer should determine what specific details are necessary to provide a complete load path for using this bracing in the structure.

FIGURE 2

EXAMPLE OF OUTSIDE CORNER DETAIL

Connect the two walls together as outlined in this detail to provide overturning restraint. The fully sheathed wall line perpendicular to the narrow bracing segment helps reduce the overturning force because the overturning moment acts over a longer distance.

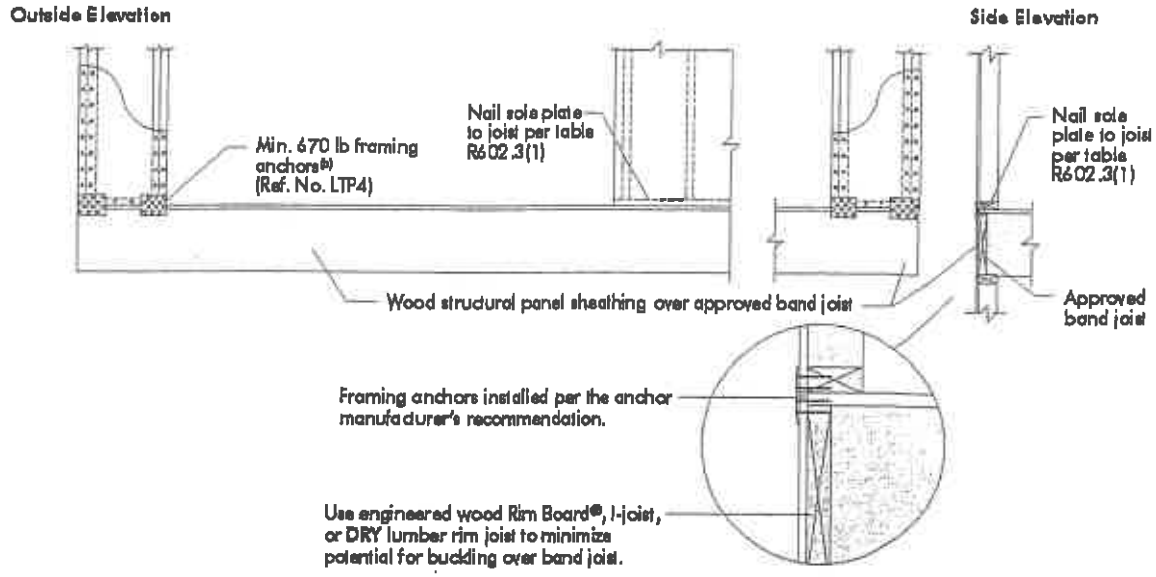




Get these details in CAD at www.apawood.org/bracing

FIGURE 3

NARROW WALL OVER RAISED WOOD FLOOR OR SECOND FLOOR – FRAMING ANCHOR OPTION[a]

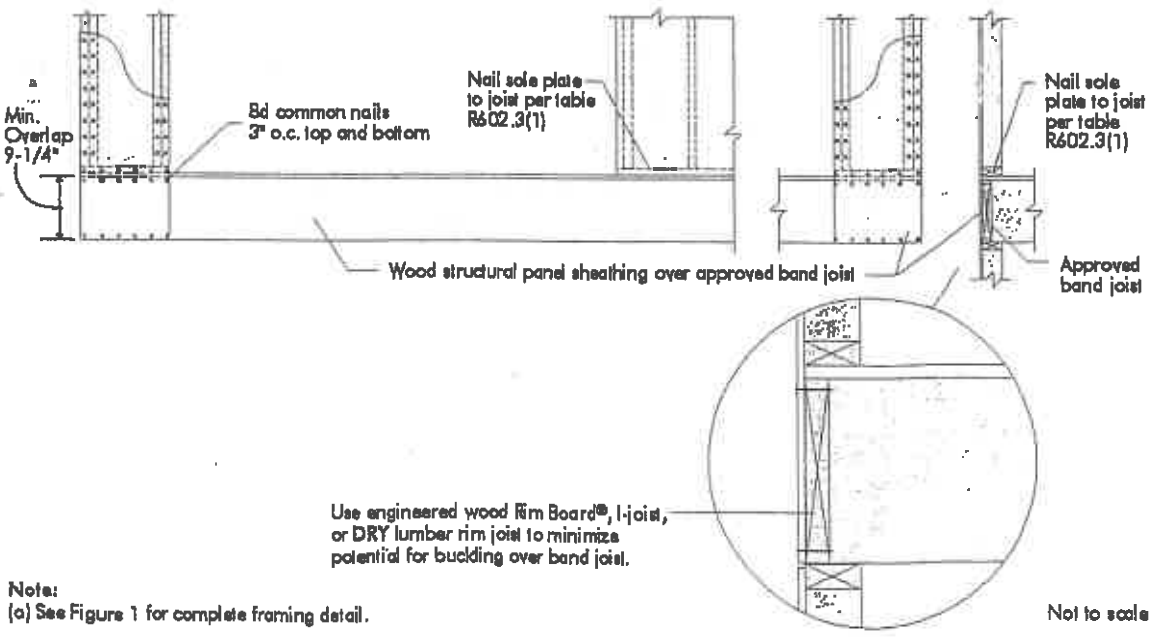


Notes:
(a) See Figure 1 for complete framing detail.
(b) Framing anchors may also be rotated vertically.

Not to scale

FIGURE 4

NARROW WALL OVER RAISED WOOD FLOOR OR SECOND FLOOR – WOOD STRUCTURAL PANEL OVERLAP OPTION[a]



Note:
(a) See Figure 1 for complete framing detail.

Not to scale

DESIGN FLEXIBILITY FOR THE WHOLE HOUSE

NARROW BRACING OPTIONS FOR A FULLY SHEATHED HOME

Because fully sheathing a home with plywood or OSB creates a rigid shell structure, the APA Narrow Wall Bracing Method and the continuously sheathed method referenced in Section R602.10.5 of the IRC solve the problem of meeting code requirements while permitting narrow walls. The IRC R602.10.5 method allows for wall segments as narrow as 24 inches, but the APA Narrow Wall Bracing Method takes the concept a step further with a configuration that adds enough structural support to safely reduce bracing width to 16 inches. Both methods can be used all around the house at garage, window, and door openings, creating a more pleasing appearance both inside and out. Table 1 summarizes minimum allowable bracing widths permitted by the IRC.

TABLE 1

ALLOWABLE BRACING SEGMENT WIDTHS FOR FULLY SHEATHED HOMES

Bracing Construction	Minimum Width of Braced Wall Panel for Wall Height of: 8 feet	9 feet	10 feet	Max. Opening Height Next to the Braced Wall
IRC R602.10.5 (see IRC for limitations)	32"	36"	40"	85% of wall height
	24"	27"	30"	65% of wall height
APA Narrow Wall[a] Bracing Method (see Figures 1, 3, 4)	16"	18"	20"	up to bottom of header

Note:
(a) The minimum width of braced wall segment for the APA Method is based on the height from the top of header to bottom of sill plate, as shown in Figure 1. Framing, such as a cripple wall, may be built on top of the header, but it does not affect the height used to determine the minimum braced wall segment width.

The illustration on page 7 shows five areas around the house in which narrow wall bracing can be used.

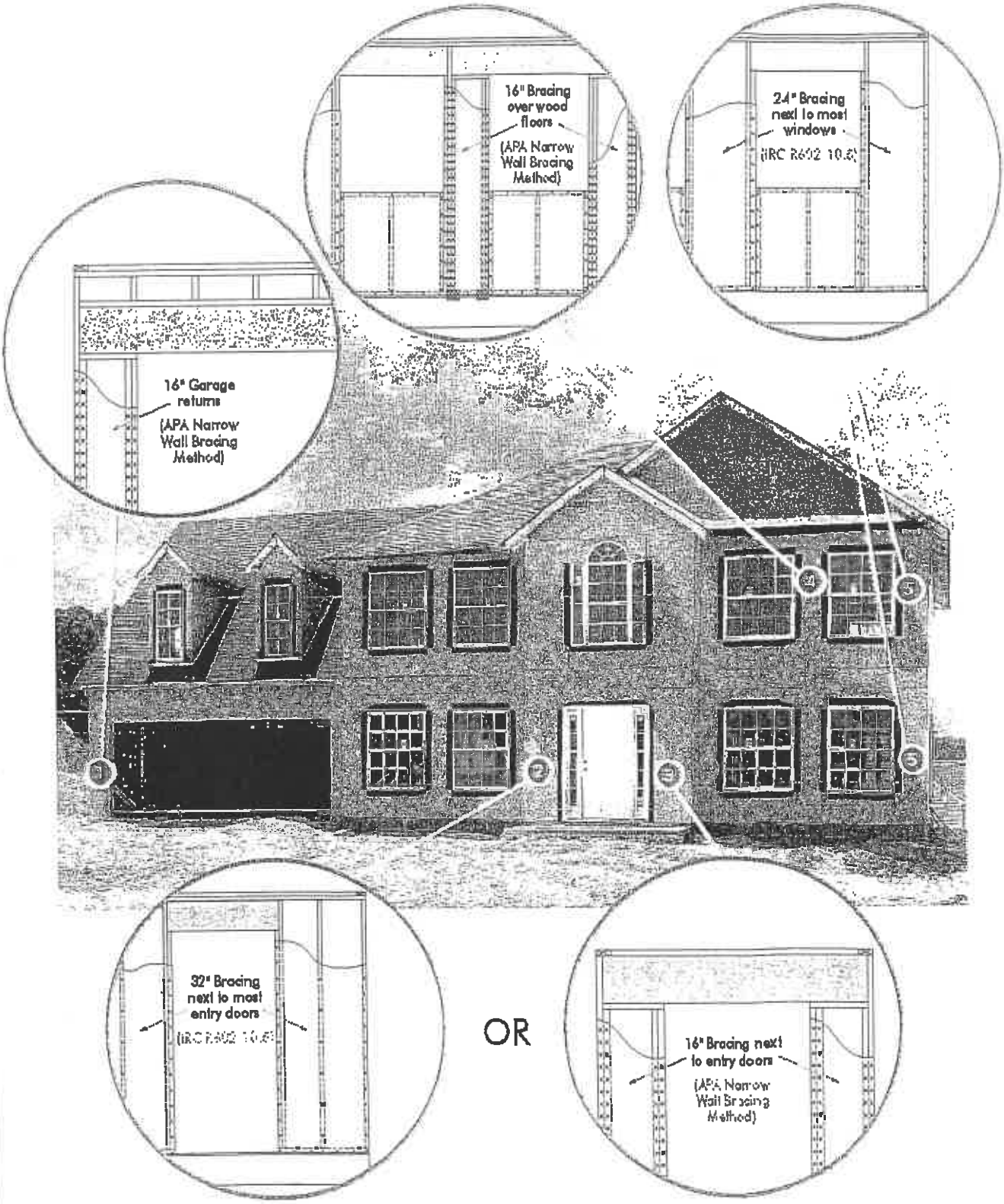
❶ Builders can easily achieve 16-inch-wide garage return walls without using exotic systems or foundation hold-down devices. The APA Narrow Wall Bracing Method is currently recognized by the 2004 IRC Supplement in Section R602.10.6.2.

❷ & ❺ Using IRC R602.10.5, bracing segments can be as narrow as 32-inches wide next to entry doors and 24-inches wide next to most windows. No header extensions or special nailing schedules are necessary.

❸ The APA Narrow Wall Bracing Method permits 16-inch-wide bracing segments next to entry doors and windows.

❹ Builders can use 16-inch-wide bracing on raised wood floors such as over basements and crawl spaces, on second and third stories, and in sunrooms.

Note: Drawings are for illustrative purposes only. Use Figures 1, 3, and 4 and the IRC for construction details and limitations.


16" Bracing over wood floors
(APA Narrow Wall Bracing Method)
24" Bracing next to most windows
(IRC R602.10.6)
16" Garage returns
(APA Narrow Wall Bracing Method)
1
2
3
32" Bracing next to most entry doors
(IRC R602.10.6)
OR
16" Bracing next to entry doors
(APA Narrow Wall Bracing Method)

City of Proctor

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Electrical Code Update
Concrete-Encased Electrode Requirements: Clarified

2005 National Electric Code (NFPA 70-2005)

Concrete-Encased Electrode. Section 250.50 and 250.52(A) (3). A change in section 250.50 now **requires** all grounding electrodes described in section 250.52(A) (1) through (6) that are present at each building or structure to be bonded together to form the premises grounding electrode system. Section 250.52(A) (3) defines a concrete-encased electrode, commonly referred to as a "ufer" ground, as consisting of at least 20 feet of ½" inch (minimum) steel reinforcing rod, or 20 feet of #4 AWG bare copper, located near the bottom of a foundation or footing and encased by at least two inches of concrete. Due to the increased use of nonmetallic piping and isolation fittings, underground water piping systems have become less reliable as a grounding electrode, therefore the code has been changed to require a concrete-encased electrode to be used where it is present. This change will require increased cooperation between electrical contractors, builders, and concrete and masonry contractors.

Any of the following methods are acceptable for complying with this new requirement:

1) Encase at least 20 feet of #4 AWG bare copper conductor in the concrete footing;
2) Connect a length of #4 AWG copper to the reinforcing steel with a clamp suitable for concrete encasement, such as a common ground rod clamp, or;
3) Stub a piece of reinforcing rod out of the footing at a convenient location. Reinforcing rods shall be permitted to be bonded together by the usual steel tie wires or other effective means. Virtually all new construction that includes concrete or masonry will have reinforcing steel that is required to be used as the concrete-encased electrode.

Based on questions and comment received by the Electrical Licensing and Inspection Unit, the following clarifying statements are made:

1) The concrete-encased electrode **must be present** to be required to be used. The requirement in section 250.50 **does not require** a concrete-encased electrode **to be installed** if it is not present.
2) If either a separate bare copper conductor or steel reinforcing rod is present or installed, the NEC does not require the portion used as a concrete-encased electrode to be bonded to other reinforcing steel in the foundation or footing.
3) If a metal underground water pipe is used as a grounding electrode and is supplemented by any other electrode that is present, including a concrete-encased electrode, the installation of a **made** electrode, such as a ground rod, is not required.

Additionally:

1) A concrete-encased electrode **is not present** if encapsulating non-conductive coatings, such as epoxy, are used for reinforcement corrosion protection.
2) A concrete-encased electrode **is not present** if a vapor barrier or insulating material that effectively isolates the concrete footing or foundation from the earth has been used.